RMetS Geoscience Data Journal

Open Access

A historical surface climate dataset from station observations in Mediterranean North Africa and Middle East areas

Manola Brunet^{1,2*}, Alba Gilabert¹, Phil Jones^{2,3} and Dimitrios Efthymiadis^{1,2†}

¹Department of Geography, Centre for Climate Change, University Rovira i Virgili, Tortosa, Spain ²Climatic Research Unit, School of Environmental Sciences, University of East Anglia, Norwich, UK ³Department of Meteorology, Center of Excellence for Climate Change Research, King Abdulaziz University, Jeddah, Saudi Arabia

*M. Brunet, Correspondence: Department of Geography, Centre for Climate Change, University Rovira i Virgili, Campus Centre, URV, 43071 Tarragona, Spain, E-mail: manola.brunet@urv.cat

This study was supported by the European Union EURO4M project (FP7-EC Cooperation Theme 9, SPACE, grant no. 242093).

Historical climatic data from station observations taken in North African and Middle East Mediterranean countries since the second half of the 19th century have been digitized and quality-controlled in the framework of the EU-funded European Reanalysis and Observations for Monitoring (EURO4M) project. Daily maximum and minimum temperatures and precipitation totals, along with sub-daily data for surface air pressure have been recovered by using historical data sources involving book/logbook collections archived in national and international data centres. The new dataset produced comprises climatic time series for 79 stations that have operated in southern and eastern Mediterranean countries. While the developed time series have data gaps, every effort has been made to infill these gaps, to improve assessments of the long-term changes in climate variability in the region.

Geosci. Data J. 1: 121-128 (2014), doi: 10.1002/gdj3.12

Received: 28 January 2014, revised: 3 March 2014, accepted: 14 March 2014

Key words: historical climate observations, data rescue, Mediterranean, North Africa, Middle East

Dataset

Roval Meteorological Society

Identifier: doi:10.5281/zenodo.7531 Creator: Centre for Climate Change (C3), Department of Geography, University Rovira i Virgili Title: C3-EURO4M-MEDARE Mediterranean historical climate data Authors: Centre for Climate Change/URV Publisher: ZENODO Publication year: 2013 Resource type: Book Version: 1.0

Introduction

A better understanding of the physical mechanisms of the Mediterranean's climate variability is crucial for developing advanced projections of future climate. To achieve this, a basin-wide knowledge of historical climate variations, with high temporal resolution, and over long-term scales is required to assess climate model simulations. Such knowledge requires long-term and high-quality climate time series, whose current

†Correction added 13 February 2015 after original online publication: Dimitrios Efthymiadis has been added to the author list.

availability is uneven in the Mediterranean, as the northern-basin countries (belonging to Europe) enjoy good data coverage, whereas the southern part (North Africa and Middle East) is a data-sparse region (Brunet *et al.*, 2013). In addition, station-based data are also needed as input to more accurate reanalysis and gridded datasets. The southern data paucity is not a result of the lack of measurements, since meteorological observations were taken since the mid-19th century by former colonial endeavours. Although deserts dominate the area, individual stations or networks were deployed in the populated parts of southern and eastern Mediterranean locations and the meteorological publications.

© 2014 The Authors. *Geoscience Data Journal* published by Royal Meteorological Society and John Wiley & Sons Ltd. This is an open access article under the terms of the Creative Commons Attribution-NonCommercial-NoDerivs License, which permits use and distribution in any medium, provided the original work is properly cited, the use is non-commercial and no modifications or adaptations are made.

In this context, the EURO4M project (http://www. euro4m.eu/index. html), in connection with the World Meteorological Organization (WMO) MEditerranean DAta Rescue (MEDARE: http://www.omm.urv.cat/ MEDARE/), has set, among other objectives, the recovery of historical climate data from North Africa and Middle Eastern Mediterranean countries; namely Morocco and Spanish enclaves, Algeria, Tunisia, Libya, Egypt, Cyprus, Lebanon and Syria. This data rescue (DARE) effort has been carried out in coordination with other relevant DARE Initiatives and projects to avoid duplication and maximize resources. These other initiatives include projects such as the French historical climate and weather observations rescue project entitled Access to climate Archives despite Asbestos -(AAA; Jourdain & Dandin, 2011), the international atmospheric circulation reconstructions over the earth initiative (ACRE; http://www.met-acre.org/Home; Allan et al., 2011) and the European ReAnalysis of Global CLIMate Observations project (ERA-CLIM; http://www. era-clim.eu/).

The chosen climatic variables are atmospheric daily minimum (TN) and maximum temperature (TX), daily precipitation total (RR) and sub-daily air pressure (PP), all observed at meteorological stations that have operated in these countries. For air pressure, especially the historical records, this often represents air pressure adjusted to sea level (SLP). Although the period of interest was the pre-1950, the spatial and temporal span of the data recovered was finally dictated by the data sources located and accessed, which are described in Section 1. Details on the quality controls (QC) to which the digitized data are subject are given in section 2, while section 3 concludes by outlining the structure of the new dataset developed and provides some notes on future prospects.

1. Data sources used and rationale for meteorological station selection

The data sources used were sought in worldwide online repositories and at national archives containing historical climate data document collections, such as meteorological logbooks, yearly books, or weather charts. In most cases, these data sources are series of scanned volumes containing data at different time scales covering the station network of a country (often including data from adjacent countries), or for a specific observatory/station. Before the Second World War, they were published mainly by French, British and Italian colonial authorities, whereas national authorities administrated the meteorological services since independence and organized the respective data publications. These publications are secondary data sources, since they are transcriptions of original meteorological logbooks gathered from various stations. They have the advantage of having passed a data quality screening (this is indicated by some comments found next to the values and also by monthly summaries of data corrections), but they may also include transcription errors that occurred during the transference from the original to the secondary source.

Most of the data sources used were located in the online repository of the Central Library of the US National Oceanic and Atmospheric Administration (NOAA) which comprises digital (scanned) versions of many meteorological data collections from all over the world (developed in the framework of NOAA/NCDC Climate Database Modernization Program, 2000-2011; http://docs.lib.noaa.gov/rescue/data_rescue_home. html). Climatological departments of other national meteorological agencies also provided digital and scanned data documents from their archives. Météo-France provided Tunisian daily data series digitized in the framework of the CIRCE project (http://www.circeproject.eu), and also scanned copies of French data publications. The UK Met Office made available scanned copies of British colonial-era data collections (ACRE initiative) through the British Atmospheric Data Centre (BADC; http://badc.nerc.ac.uk/browse/badc/corral/ima ges/metobs). The Libyan National Meteorological Center (LNMC) made available data catalogues for various stations from the country. The Spanish meteorological agency (AEMet) provided scanned copies of bulletins including data for stations in North Africa. Finally, at the library of the Ebro Observatory (Tortosa, Spain), supplementary data books were located which filled in data gaps within the overall climatic data series being recovered. Table 1 provides a list of the various climatic data books/collections used from all these data centres for recovering Mediterranean historical climate data. NOAA's Central Library was the main data source for the dataset development (71% of the total data), whereas the imaged data acquired from Météo-France (11%), LNMC (11%), UK Met Office (3%), AEMet (2%) and Ebro Observatory (2%) also played an important role, especially for specific countries and stations.

For each EURO4M/MEDARE-targeted country, the meteorological stations selected for data digitization followed this rationale:

- Stations that have the longest and most complete historical records, either on their own or in combination with other records from different sources.
- Stations for which there is a potential of merging their data with digitized series existing in climatic national and international databanks (spanning recent and current decades) and, therefore, may lead to the development of long-term climate time series.
- Stations that form a network covering the Mediterranean part of each country, i.e. within a zone extending no more than ~200 km from the coastline (only a few exceptions were made, the most prominent being the remote El Golea station in Algerian Sahara), and having a roughly even spatial distribution.

The 79 stations selected are listed in Table 2, while the location of their sites is shown in Figure 1.

Table 1. Collections of	of climatic of	data sources	used.
-------------------------	----------------	--------------	-------

Abbreviated name	Data source	Countries covered	Data centres	Year range
ABCM-France	Annales du Bureau Central Météorologique de France	Algeria, Egypt, Lebanon, Tunisia	NOAA, Météo–France, Ebro observatory	1884–1914
AO-Ksara	Annales de l'Observatoire de Ksara	Lebanon	NOAA	1921–1971
ASM-France	Annuaire de la Société Météorologique de France	Algeria	Météo-France	1852–1867
AULO-Beirut	American Univ. (Syrian Protestant College) – Lee Observatory. Beirut	Syria	NOAA	1914–1915
BCM-Liban	Bulletin Climatologique Mensuel du Liban	Lebanon	NOAA	1928–1970
BM-Algérie	Bulletin Météorologique de l'Algérie	Algeria, Morocco, Tunisia	NOAA	1877–1938
BM-Cirenaica	Bolletino Meteorologico della Cirenaica	Libya	NOAA	1928–1931
BM-Maroc	Bulletin de Météorologique du Maroc	Algeria, Morocco, Spain	NOAA	1953–1978
BMA-Italiana	Bollettino Meteorologico dell'Africa Italiana	Libya	NOAA	1932–1936
BMD-España	Boletín Meteorológico Diario de España	Morocco, Spain	AEMet	1899–1948
Cairo-MR	Cairo. Meteorological Reports	Egypt	NOAA	1904–1941
CIRCE	CIRCE-project digital data files	Tunisia	Météo-France	1899–1961
Egypt-DWR	Egypt. Daily Weather Reports	Egypt	NOAA	1907–1957
Helwan-MR	Helwan Observatory Meteorological Reports	Egypt	NOAA	1942–1944
Libyan-NMC	Libyan National Meteorological Center Archives	Libya	LNMC	1916–2008
MCD-Syria	Monthly Climatological Data. Syria	Syria	NOAA	1955–1975
SM-Tunis	Service Météorologique de Tunis	Tunisia	NOAA	1907–1932
UK-CR	UK Climatological Returns	Cyprus	UK Met Office	1881–1922
UK-DWR	UK Daily Weather Reports	Egypt	UK Met Office	1900–1904

2. Data digitization and quality control

Using the data sources mentioned above, data digitization for the selected stations was key-entered and carried out with special care. The varying quality of the hand written or typed data pages and their scanned copies posed many difficulties when digitizing the data: scanned pages were sometimes too dark or too faded and this affected the readability not only of meteorological data but also of their corresponding dates. Therefore, date identification was crucial and time-consuming, since there are cases of missing data pages, double/triple copies of the same page or deviations from an ascending chronological page order found in the data books used. All these cases were potential sources for errors affecting the accuracy of the digitized data files; potential mistakes that without a visual cross-checking could not have been avoided and had possibly introduced non-systematic biases and additionally potentially compromised data reliability for use in future applications.

Data QC was the next step and comprised three stages:

 Visual cross-comparison between the data source and the digitized data to verify the fidelity of digitization (transcription accuracy): sample data were examined across the overall data period to check if the correct station was indeed used (especially in the case of multi-station data pages), if the dates were correctly assigned and if the targeted climatic variables were correctly transcribed.

- 2. Automatic QC to identify non-systematic errors in time-series: the RClimDex software package (Zhang & Yang, 2004), reinforced with the 'extraQC' software (Aguilar & Prohom, 2011) were employed to identify potential temperature and precipitation data errors. The latter tool is an improved, version of the standard 'RClimDex' software and performs a series of additional tests to further ensure internal consistency (e.g. consecutive identical values and rounded values) and temporal coherency (large inter-daily differences), in addition to the usual gross-error and tolerance tests. Suspicious values were labelled and examined against the data sources to validate or reject them and, therefore, to either retain them or set them to missing, accordingly. For air pressure data QC, various statistical tests were developed aimed at identifying cases of extreme low/high air pressure records and also cases of zero-variance ('consecutive identical values') or high variance ('jumps' or 'outliers') for consecutive-day observations (and also for consecutive intra-day observations, if available).
- 3. Cross-station data checks by plotting, in parallel, data from two or more nearby stations to examine the inter-station consistency and ensure spatial coherency. Digitization and potential data source errors were identified as in the previous stage.

Table 2. List of stations, climatic variables and data periods recovered.

Morocco Tangler city 60100 35.78" h 5.82" W 86 TN, TX, RR, PP 1912 1961 Al Hoceima 60101 35.78" h 3.85" W 15 TN, TX, RR, PP 1961-1978 Oujda 60115 34.78" h 1.93" W 478 TN, TX, RR, PP 1906-1978 Tetuan 60318 35.58" N 5.33" W 10 TN, TX, RR, PP 1901-1978 Spain Ceuta 60320 35.89" N 5.53" W 7 TN, TX, RR, PP 1931-1933 Algeria Skikda-Cap Bougarouni 60357 36.90" N 8.44"E 10 PP TR7-1938 Algiers-Bouzareah 60372 36.90" N 3.04"E 38 TN, TX, RR, PP 1877-1938 Algiers-Cap Caxine 60374 36.80" N 3.03"E 38 TN, TX, RR, PP 1877-1938 Algiers-Bouzareah 60395 36.52" N 4.05"E 222 TN, TX, RR, PP 1879-1838 Frat National 60395 36.52" N 4.05"E 222 TN, TX, RR, PP	Country	Location/Station name	WMO code	Latitude	Longitude	Altitude (m)	Variables	Length
Tangler aliport 61010 35.73"N 5.90"W 15 TN, TX, RR, PP 1965-1978 Oujda 60115 34.78"N 3.85"W 12 TN, TX, RR, PP 1910-1978 Spain Ceuta 60320 35.89"N 5.35"W 87 TN, TX, RR, PP 1930-1932 Algeria Skikkal-Cap Bougarouni 60335 37.08"N 6.47"E 195 TN, TX, RR, PP 1977-1938 Algeria Skikkal-Cap Bougarouni 60372 36.80"N 3.03"E 34 TN, TX, RR, PP 1877-1938 Algiers-Ville/Université 60367 36.90"N 3.04"E 38 TN, TX, RR, PP 1877-1938 Algiers-Souzcaech 60372 36.80"N 3.03"E 344 TN, TX, RR, PP 1879-1838 Fort National 60395 36.53"N 4.20"E 92 TN, TX, RR, PP 1879-1838 Fort National 60413 36.78"N 5.00"E 9 TN, TX, RR, PP 1879-1838 Oran 60461 35.79"N 5.00"E 9 TN, TX,	Morocco	Tangier city	60100	35.78°N	5.82°W	86	TN, TX, RR, PP	1912–1961
Al Hoceima 60107 35.18*N 3.85*W 12 TN, TX, RR, PP 1950-1978 Tetuan 60318 35.58*N 5.33*W 10 TN, TX, RR, PP 1950-1978 Spain Ceuta 60338 35.28*N 5.33*W 10 TN, TX, RR, PP 1959-1952 Algeria Kikda-Cap Bougarouni 60335 37.08*N 6.47*E 195 TN, TX, RR 1939-1938 Annaba-Cap de Garde 60357 36.90*N 8.44*E 10 PP 1877-1938 Algiers-Bouzareah 60372 36.80*N 3.03*E 344 TN, TX, RR 1877-1938 Algiers-Cap Caxine 60372 36.80*N 3.03*E 344 TN, TX, RR, PP 1879-1838 Fort National 60395 36.72*N 3.03*E 344 TN, TX, RR, PP 1879-1838 Bejaia-Cap Carbon 60400 36.72*N 3.03*E 344 TN, TX, RR, PP 1879-1838 Bejaia-Cap Carbon 60419 36.37*N 1.9*E 922 TN, TX, RR, PP 1879-1838		Tangier airport	60101	35.73°N	5.90°W	15	TN, TX, RR, PP	1961–1978
Oujda 60115 34.78*N 1.93*W 478 TN, TX, RR, PP 1910-1978 Spain Ceuta 60320 35.89*N 5.35*W 80 TN, TX, RR 1933-1939 Algeria Skikda-Cap Bougarouni 60335 37.08*N 6.47*E 195 TN, TX, RR 1931-1938 Algeria Skikda-Cap Bougarouni 60357 36.97*N 8.44*E 10 PP 161 TN, TX, RR 1939-1932 Algiers-Wouzneah 60377 36.97*N 8.07*E 59 TN, TX, RR, PP 1877-1938 Algiers-Souzneah 60374 36.80*N 3.07*E 29 TN, TX, RR, PP 1879-1838 Fort National 60395 36.63*N 4.07*E 222 TN, TX, RR, PP 1884-1938 Fort National 60401 36.78*N 5.10*E 9 TN, TX, RR, PP 1884-1938 Orleansville (Chief) 60425 36.17*N 1.34*E 112 TN, TX, RR, PP 1879-1838 Stoff 60415 3.16*N 5.40*E 10		Al Hoceima	60107	35.18°N	3.85°W	12	TN, TX, RR, PP	1965–1978
Tetuan 60318 55.58"N 5.33"W 10 TN, TX, RR 1920 1978 Algeria Skikda-Cap Bougarouni 60338 35.28"N 2.96"W 47 TN, TX, RR 1899-1962 Algeria Skikda-Cap Bougarouni 60357 36.97"N 7.77"E 161 TN, TX, RR 1990-1937 Annaba-Cap de Garde 60357 36.90"N 8.44"E 10 PP 1877-1938 Algiers-Ville/Université 60369 36.78"N 3.07"E 59 TN, TX, RR 1893-1920 Algiers-Cap Caxine 60372 36.80"N 3.03"E 344 TN, TX, RR, PP 1878-1879 Tizl Ouzou 60395 36.72"N 4.05"E 222 TN, TX, RR, PP 1879-1838 Bejala-Cap Carbon 60401 36.75"N 5.10"E 25 TN, TX, RR, PP 1879-1838 Constantine 60419 36.18"N 5.40"E 1081 TN, TX, RR, PP 1879-1838 Setif 60445 35.10"N 1.65"W 53 TN, TX, RR, PP		Oujda	60115	34.78°N	1.93°W	478	TN, TX, RR, PP	1910–1978
Spain Ceuta 60320 35.89*N 5.35*W 87 TN, TX, RR 1933.1939 Algeria Skikda-Cap Bougarouni 60355 37.08*N 6.47*E 195 TN, TX 1931.1938 Annaba-Cap de Garde 60357 36.90*N 8.44*E 10 PP 1877.1938 Algiers-Siuzareah 60327 36.90*N 3.07*E 34 TN, TX, RR, PP 1877.1938 Algiers-Gouzareah 60374 36.80*N 3.07*E 34 TN, TX, RR, PP 1879.1938 Algiers-Gouzareah 60372 36.80*N 3.07*E 222 TN, TX, RR, PP 1879.1838 Fort National 60395 36.63*N 4.20*E 942 TN, TX, RR, PP 1826-1938 Bejala-Cap Carbon 60401 36.78*N 5.10*E 225 TX, TN 1926-1938 Oran 60415 36.17*N 1.34*E 112 TN, TX, RR, PP 1879-1838 Oran 60461 35.70*N 0.65*W 53 TN, TX, RR, PP 1879-1838		Tetuan	60318	35.58°N	5.33°W	10	TN, TX, RR	1920–1978
Mellila 60338 35.28°N 2.96°W 47 TN, TX, RR 1899-1962 Algeria Kikda-Cap Be Garde 60355 36.99°N 7.79°E 161 TN, TX, RR 1991-1933 La Calle (El Kala) 60367 36.99°N 8.44°E 10 PP 1877-1938 Algiers-Ville/Université 60367 36.80°N 3.07°E 59 TN, TX, RR, PP 1877-1938 Algiers-Cap Carbon 60374 36.80°N 3.07°E 344 TN, TX, RR, PP 1879-1838 Bejala-Cap Carbon 60400 36.78°N 5.10°E 97 TN, TX, RR, PP 1884-1938 Orleansville (Port) 60410 36.78°N 5.10°E 97 TN, TX, RR, PP 1880-1938 Orleansville (Chief) 60425 36.17°N 1.34°E 112 TN, TX, RR, PP 1881-1938 Oran 60461 35.70°N 0.65°W 53 TN, TX, RR, PP 1879-1938 Sidt-Bet-Abubés 60520 35.20°N 0.65°W 53 TN, TX, RR, PP 1896-1938 </td <td>Spain</td> <td>Ceuta</td> <td>60320</td> <td>35.89°N</td> <td>5.35°W</td> <td>87</td> <td>TN, TX, RR</td> <td>1933–1939</td>	Spain	Ceuta	60320	35.89°N	5.35°W	87	TN, TX, RR	1933–1939
Algeria Skikda-Cap Bougarouni 60355 37.08°N 6.47°E 195 TN, TX 1331-1938 Anaba-Cap de Garde 60367 36.90°N 8.44°E 10 PP 1877-1938 Algiers-Wile/Université 60369 36.78°N 3.07°E 59 TN, TX, RR, PP 1877-1938 Algiers-Bouzareah 60372 36.80°N 3.03°E 34 TN, TX, RR, PP 1887-1938 Algiers-Cap Caxine 60374 36.80°N 3.03°E 34 TN, TX, RR, PP 1889-1892 Fort National 60395 36.63°N 4.20°E 942 TN, TX, RR, PP 1884-1938 Bejaia-Bougie (Port) 60401 36.78°N 5.10°E 25 TN, TX, RR, PP 1880-1938 Oran 60445 36.18°N 5.40°E 1081 TN, TX, RR, PP 1879-1838 Stiff-Bel-Abbés 60520 35.0°N 0.30°W 78 TN, TX, RR, PP 1878-1938 Oran 60445 35.16°N 1.85°W 83 TN, TX, RR P849-1938 <tr< td=""><td></td><td>Melilla</td><td>60338</td><td>35.28°N</td><td>2.96°W</td><td>47</td><td>TN, TX, RR</td><td>1899–1962</td></tr<>		Melilla	60338	35.28°N	2.96°W	47	TN, TX, RR	1899–1962
Annaba-Cap de Garde 60357 36.97"N 7.79"E 161 TN, TX, RR 1909-1937 Algiers-Ville/Université 60367 36.90"N 8.44"E 100 PP 1877-1938 Algiers-Bouzareah 60372 36.80"N 3.03"E 344 TN, TX, RR, PP 1877-1938 Algiers-Cap Carbon 60395 36.63"N 4.05"E 222 TN, TX, RR, PP 1879-1838 Bejala-Cap Carbon 60400 36.75"N 5.10"E 92 TN, TX, RR, PP 1809-1932 Oreansville (Chlef) 60415 36.15"N 5.10"E 97 TN, TX, RR, PP 1878-1938 Orean-Cap Falcon 60445 36.15"N 5.40"E 1081 TN, TX, RR, PP 1878-1938 Oran 60445 36.16"N 5.40"E 1081 TN, TX, RR, PP 1879-1938 Setif 60445 35.10"N 1.65"W 53 TN, TX, RR, PP 1879-1938 Toran 60445 35.0"N 0.65"W 53 TN, TX, RR, PP 1899-1936 Toran <td>Algeria</td> <td>Skikda-Cap Bougarouni</td> <td>60355</td> <td>37.08°N</td> <td>6.47°E</td> <td>195</td> <td>TN, TX</td> <td>1931–1938</td>	Algeria	Skikda-Cap Bougarouni	60355	37.08°N	6.47°E	195	TN, TX	1931–1938
La Calle (El Kala) 60367 36.90°N 8.44°E 10 PP 17.71938 Algiers-Wile/Université 60369 36.78°N 3.03°E 344 TN, TX, RR PP 1877-1938 Algiers-Ga Caxine 60374 36.80°N 3.03°E 344 TN, TX, RR 1878-1879 Tizi Ouzou 60395 36.63°N 4.20°E 22 TN, TX, RR, PP 1879-1838 Fort National 60395 36.63°N 4.20°E 22 TN, TX, RR, PP 1879-1838 Bejaia-Cap Carbon 60400 36.78°N 5.10°E 92 TN, TX, RR, PP 1880-1938 Orteansville (Chlef) 60419 36.73°N 5.10°E 9 TN, TX, RR, PP 1880-1938 Setif 60445 36.12°N 5.10°E 12 TN, TX, RR, PP 1880-1938 Setif 60445 36.12°N 5.40°E 1081 TN, TX, RR, PP 1879-1838 Setif 60445 36.12°N 0.63°W 33 TN, TX, RR, PP 1879-1838 Setif 60445 35.70°N 0.63°W 78 TN, TX, RR, PP 1872-1938 Nemours (Ghazaouet) 60517 35.10°N 1.85°W 83 TN, TX, RR, PP 1878-1938 Sidi-Bel-Abbés 60525 34.85°N 5.72°E 125 TN, TX, RR, PP 1878-1938 Sidi-Bel-Abbés 60525 34.85°N 5.72°E 125 TN, TX, RR, PP 1880-1938 Biskra 60525 34.85°N 5.72°E 125 TN, TX, RR, PP 1880-1938 Biskra 60552 34.85°N 5.72°E 125 TN, TX, RR, PP 1878-1938 Biskra 60552 34.85°N 5.72°E 125 TN, TX, RR, PP 1878-1938 Biskra 60550 35.68°N 10.0°E 1320 TN, TX, RR, PP 1878-1938 Biskra 60550 35.68°N 10.0°E 1320 TN, TX, RR, PP 1878-1938 Biskra 60550 35.68°N 10.0°E 1320 TN, TX, RR, PP 1892-1938 Biskra 60550 35.68°N 10.17°E 36 TN, TX, RR, PP 1892-1938 Biskra 60550 35.68°N 10.17°E 36 TN, TX, RR, PP 1892-1938 Biskra 60751 36.88°N 10.17°E 36 TN, TX, RR, PP 1892-1938 Biskra 60751 36.88°N 10.17°E 44 TN, TX, RR, PP 1920-1959 Tunisa 60714 37.23°N 09.84°E 24 TN, TX, RR, PP 1920-1959 Tunisa 60750 33.95°N 30.0°E 134 TN, TX, RR, PP 1920-1959 Tunisa 60760 33.95°N 30.17°E 30 TN, TX, RR, PP 1920-1959 Fordouba Souk-el-Arba 60725 36.84°N 10.17°E 43 TN, TX, RR, PP 1920-1957 Tozeur 60760 33.95°N 08.11°E 50 TN, TX, RR, PP 1920-1957 Tozeur 60760 33.95°N 08.11°E 50 TN, TX, RR, PP 1920-1957 Fordouba Souk-el-Arba 60750 34.72°N 10.23°E 4 TN, TX, RR, PP 1930-1957 Tozeur 60760 33.95°N 08.11°E 50 TN, TX, RR, PP 1930-1957 Tozeur 60760 33.95°N 08.11°E 50 TN, TX, RR, PP 1930-1957 Benghaz Regima (Ragma) 620		Annaba-Cap de Garde	60357	36.97°N	7.79°E	161	TN, TX, RR	1909–1937
Algiers-Ville/Université 60369 36.78°N 3.07°E 59 TN, TX, RR, PP 1877-1938 Algiers-Cap Caxine 60374 36.80°N 3.04°E 38 TN, TX, RR, PP 1878-1879 Trizi Ouzou 60395 36.63°N 4.05°E 222 TN, TX, RR, PP 1884-1938 Bejala-Cap Carbon 60401 36.75°N 5.10°E 29 TN, TX, RR, PP 1884-1938 Bejala-Bougie (Port) 60415 36.75°N 5.10°E 9 TN, TX, RR, PP 1880-1938 Orleansville (Chlef) 60425 36.17°N 1.34°E 112 TN, TX, RR, PP 1873-1938 Oran 60445 35.70°N 0.65°W 53 TN, TX, RR, PP 1872-1936 Oran 60445 35.70°N 0.65°W 53 TN, TX, RR, PP 1872-1938 Coran-Cap Falcon 60445 35.20°N 0.65°W 73 TN, TX, RR, PP 1872-1938 Sidi-Bel-Abbeis 60520 35.20°N 0.65°W 74 TN, TX, RR, PP 1872-1938		La Calle (El Kala)	60367	36.90°N	8.44°E	10	PP	1877–1938
Algiers-Cap Caxine 60374 36.80°N 3.03°E 34 TN, TX, RR 1893-1920 Algiers-Cap Caxine 60374 36.80°N 3.03°E 38 TN, TX, RR, PP 1879-1838 Fort National 60395 36.63°N 4.20°E 942 TN, TX, RR, PP 1879-1838 Bejaia-Cap Carbon 60440 36.78°N 5.10°E 92 TX, TX, RR, PP 1884-1938 Constantine 60419 36.78°N 5.10°E 9 TN, TX, RR, PP 1880-1938 Orleansville (Chlef) 60425 36.13°N 5.60°E 600 TN, TX, RR, PP 1879-1838 Oran 60445 36.13°N 5.40°E 1081 TN, TX, RR, PP 1879-1938 Tebessa 60451 35.77°N 0.68°W 53 TN, TX, RR, PP 1879-1938 Nemours (Ghazaouet) 60520 35.0°N 0.63°W 46 TN, TX, RR, PP 1880-1938 Laghouat 605550 33.80°N 2.89°E 767 TN, TX, RR, PP 1882-1938 El-Golea		Algiers-Ville/Université	60369	36.78°N	3.07°E	59	TN, TX, RR, PP	1877–1938
Algers-Cap Caxine 60374 36.80°N 3.04°E 38 TN, TX, RR 1878-1879 Tizi Ouzou 60395 36.72°N 4.05°E 222 TN, TX, RR, PP 1879-1838 Brejaia-Cap Carbon 60400 36.75°N 5.10°E 29 TN, TX, RR, PP 1884-1938 Brejaia-Bougie (Port) 60411 36.75°N 5.10°E 29 TN, TX, RR, PP 1880-1938 Orleansville (Chlef) 60425 36.17°N 1.34°E 112 TN, TX, RR, PP 1879-1838 Setif 60445 36.18°N 5.40°E 1081 TN, TX, RR, PP 1879-1938 Oran 60445 35.70°N 0.65°W 33 TN, TX, RR, PP 1879-1938 Tebessa 60475 35.42°N 8.12°E 863 TN, TX, RR, PP 1879-1938 Sidi-Bel-Abbés 60520 35.20°N 0.63°W 476 TN, TX, RR, PP 1880-1938 Biskra 60555 34.85°N 5.72°E 125 TN, TX, RR, PP 1880-1938 Geryville (Eh-Baya		Algiers-Bouzareah	60372	36.80°N	3.03°E	344	TN, TX, RR	1893–1920
Tiz Ouzou 60395 36.72"N 4.05"E 222 TN, TX, RR, PP 1879–1838 Fort National 60395 36.63"N 4.20"E 942 TN, TX, RR, PP 1884-1398 Bejaia-Bougie (Port) 60410 36.75"N 5.10"E 9 TN, TX, RR, PP 1880–1938 Orleansville (Chlef) 60425 36.17"N 1.34"E 112 TN, TX, RR, PP 1879–1538 Oran Garan 60445 35.70"N 0.65"W 53 TN, TX, RR, PP 1879–1538 Tebessa 60475 35.42"N 8.12"E 863 TN, TX, RR, PP 1878–1398 Sidi-Bel-Abbés 60520 35.20"N 0.63"W 76 TN, TX, RR, PP 1878–1398 Sidi-Bel-Abbés 60520 35.20"N 0.63"W 76 TN, TX, RR, PP 1878–1398 Sidi-Bel-Abbés 60520 35.60"N 1.00"E TN, TX, RR, PP 1880–1398 Biskra 60525 33.60"N 1.00"E TN, TX, RR, PP 1892–1957 Tunisia		Algiers-Cap Caxine	60374	36.80°N	3.04°E	38	TN, TX, RR	1878–1879
Fort National 60395 36.63°N 4.20°E 942 TN, TX, RR, PP 1884–1938 Bejaia-Bougie (Port) 60400 36.78°N 5.10°E 225 TX, TN 1926–1938 Bejaia-Bougie (Port) 60419 36.73°N 6.62°E 660 TN, TX, RR, PP 1880–1938 Orleansville (Chief) 60445 36.17°N 1.34°E 1081 TN, TX, RR, PP 1878–1938 Oran 60461 35.70°N 0.65°W 53 TN, TX, RR, PP 1878–1938 Oran-Cap Falcon 60475 35.42°N 8.12°E 863 TN, TX, RR, PP 1879–1938 Sidi-Bel-Abbés 60520 35.20°N 0.63°W 75 TN, TX, RR, PP 1878–1938 Sidi-Bel-Abbés 60520 33.66°N 1.00°E 1320 TN, TX, RR, PP 1880–1938 Biskra 60525 34.85°N 5.72°E 125 TN, TX, RR 1888–1938 Geryville (El-Bayadh) 60550 30.65°N 1.00°E 1320 TN, TX, RR, PP 1920–1959 <		Tizi Ouzou	60395	36.72°N	4.05°E	222	TN, TX, RR, PP	1879–1838
Bejaia-Gougie (Port) 60400 36.78°N 5.10°E 225 TX, TN 1926-1938 Bejaia-Bougie (Port) 60401 36.75°N 5.10°E 9 TN, TX, RR, PP 1809-1936 Orleansville (Chief) 60425 36.17°N 1.34°E 112 TN, TX, RR, PP 1879-1838 Orleansville (Chief) 60445 36.17°N 5.40°E 1081 TN, TX, RR, PP 1879-1838 Oran-Cap Falcon 60461 35.70°N 0.65°W 53 TN, TX, RR, PP 1879-1938 Tebessa 60475 35.42°N 8.12°E 663 TN, TX, RR, PP 1878-1938 Nemours (Ghazaouet) 60517 35.10°N 1.85°W 83 TN, TX, RR, PP 1880-1938 Biskra 60525 34.85°N 5.72°E TN, TX, RR, PP 1880-1938 Laghouat 60545 33.80°N 2.89°E 767 TN, TX, RR, PP 1892-1938 Tunisia Bizerte Cap Blanc 60714 37.33°N 09.84°E 4 TN, TX, RR, PP 1892-1935		Fort National	60395	36.63°N	4.20°E	942	TN, TX, RR, PP	1884–1938
Bejala-Bougie (Port) 60401 36.75°N 5.10°E 9 TN, TX, RR, PP 1880-1938 Constantine 60419 36.37°N 6.62°E 660 TN, TX, RR, PP 1880-1938 Orleansville (Chlef) 60425 36.17°N 5.40°E 1081 TN, TX, RR, PP 1879-1338 Oran 60461 35.77°N 0.80°W 78 TN, TX, RR, PP 1879-1338 Oran-Cap Falcon 60485 35.77°N 0.80°W 78 TN, TX, RR, PP 1879-1338 Tebessa 60475 35.42°N 8.12°E 803 TN, TX, RR, PP 1879-1338 Sidi-Bel-Abbés 60520 35.20°N 0.63°W 476 TN, TX, RR, PP 1880-1938 Laghouat 60550 33.80°N 2.89°E 767 TN, TX, RR, PP 1880-1938 Tunisia Bizerte Cap Blanc 60714 37.33°N 0.84°E 264 TN, TX, RR, PP 1899-1961 Bizerte Cap Blanc 60715 36.83°N 10.12°E 6 TN, TX, RR, PP 1899-1957		Beiaia-Cap Carbon	60400	36.78°N	5.10°E	225	TX, TN	1926–1938
Constantine 60419 36.37*N 6.62*E 660 TN, TX, RR, PP 1880-1938 Orleansville (Chlef) 60425 36.17*N 1.34*E 112 TN, TX, RR, PP 1879-1838 Oran 60461 35.70*N 0.65*W 53 TN, TX, RR, PP 1872-1936 Oran-Cap Falcon 60485 35.77*N 0.80*W 78 TN, TX, RR, PP 1872-1938 Tebessa 60475 35.42*N 0.63*W 76 TN, TX, RR, PP 1879-1938 Nemours (Ghazaouet) 60517 35.10*N 1.85*W 83 TN, TX, RR, PP 1880-1938 Biskra 60520 35.20*N 0.63*W 76 TN, TX, RR 1880-1938 Laghouat 60545 33.60*N 2.09*E 767 TN, TX, RR 1888-1938 El-Golea 60590 30.55*N 3.07*E 394 TN, TX, RR, PP 1892-1937 Tunisei 60715 36.80*N 10.17*E 36 TN, TX, RR, PP 1892-1937 Kelibia 60725		Beiaia-Bougie (Port)	60401	36.75°N	5.10°E	9	TN, TX, RR	1909–1926
Orleansville (Chlef) 60425 36.17°N 1.34°E 112 TN, TX, RR, PP 1879-1838 Setif 60445 36.18°N 5.40°E 1081 TN, TX, RR, PP 1879-1838 Oran 60461 35.70°N 0.65°W 53 TN, TX, RR, PP 1878-1938 Oran-Cap Falcon 60485 35.77°N 0.80°W 78 TN, TX, RR, PP 1879-1938 Tebessa 60475 35.10°N 0.65°W 83 TN, TX, RR, PP 1879-1938 Sidi-Bel-Abbés 60520 35.20°N 0.63°W 476 TN, TX, RR, PB 1889-1938 Biskra 60550 33.66°N 1.00°E 120 TN, TX, RR, PB 1889-1938 Geryulle (El-Bayadh) 60550 33.66°N 1.00°E 120 TN, TX, RR, PP 1899-1961 Bizerte Cap Blanc 60714 37.33°N 09.84°E 264 TN, TX, RR, PP 1899-1912 Tunise 60725 36.48°N 10.17°E 6 TN, TX, RR, PP 1920-1939 Tunise-t-Aouina		Constantine	60419	36.37°N	6.62°E	660	TN, TX, RR, PP	1880–1938
Settif 60445 36.18*N 5.40*E 1081 TN, TX, RR, PP 1878-1938 Oran 60461 35.70*N 0.65*W 53 TN, TX, RR, PP 1882-1966 Oran-Cap Falcon 60485 35.70*N 0.80*W 78 TN, TX, RR, PP 1879-1938 Tebessa 60475 35.42*N 8.12*E 863 TN, TX, RR, PP 1879-1938 Nemours (Ghazaouet) 60517 35.10*N 1.85*W 83 TN, TX, RR, PP 1878-1938 Biskra 60525 34.85*N 5.72*E 125 TN, TX, RR 1880-1938 Laghouat 60545 33.80*N 2.89*E 76 TN, TX, RR 1888-1938 EH-Golea 60590 30.55*N 3.07*E 394 TN, TX, RR, PP 1892-1938 Tunisa 60714 37.23*N 09.84*E 64 TN, TX, RR, PP 1892-1938 Tunise-HAutia 60715 36.80*N 10.17*E 6 TN, TX, RR, PP 1921-1957 Tunise-HAutia 60720 <td< td=""><td></td><td>Orleansville (Chlef)</td><td>60425</td><td>36.17°N</td><td>1.34°F</td><td>112</td><td>TN, TX, RR, PP</td><td>1879–1838</td></td<>		Orleansville (Chlef)	60425	36.17°N	1.34°F	112	TN, TX, RR, PP	1879–1838
Oran 60461 35.70°N 0.65°W 53 TN, TX, RR, PP 1852-1966 Oran-Cap Falcon 60485 35.77°N 0.80°W 78 TN, TX, RR, PP 1896-1938 Tebessa 60475 35.42°N 8.12°E 863 TN, TX, RR, PP 1876-1938 Sidi-Bel-Abbés 60520 35.80°N 0.63°W 476 TN, TX, RR, PP 1880-1938 Biskra 60525 34.85°N 5.72°E 125 TN, TX, RR, PP 1880-1938 Laghouat 60550 33.68°N 1.00°E 1320 TN, TX, RR, PP 1882-1938 Tunisia Bizerte Cap Blanc 60714 37.33°N 09.84°E 264 TN, TX, RR, PP 1892-1959 Tunisia 60714 37.33°N 09.82°E 6 TN, TX, RR, PP 1920-1959 Tunis 60715 36.83°N 10.23°E 4 TN, TX, RR, PP 1920-1959 Kelibia 60720 36.48°N 10.10°E 65 TN, TX, RR, PP 1920-1957 Kelibia		Setif	60445	36.18°N	5.40°E	1081	TN, TX, RR, PP	1878-1938
Oran-Cap Falcon 60485 35.77°N 0.80°W 78 TN, TX, RR 1826-1938 Tebessa 60475 35.42°N 8.12°E 863 TN, TX, RR, PP 1878-1938 Sidi-Bel-Abbés 60520 35.20°N 0.63°W 476 TN, TX, RR, PP 1878-1938 Biskra 60520 35.20°N 0.63°W 476 TN, TX, RR, PP 1880-1938 Geryville (El-Bayadh) 60550 33.68°N 1.00°E 1320 TN, TX, RR, PP 1888-1938 Geryville (El-Bayadh) 60550 33.68°N 1.00°E 1320 TN, TX, RR, PP 1892-1938 Tunisia Bizerte Cap Blanc 60714 37.23°N 09.84°E 64 TN, TX, RR, PP 1892-1935 Tunis 60715 36.80°N 10.17°E 36 TN, TX, RR, PP 1920-1959 Tunis 60715 36.80°N 10.17°E 36 TN, TX, RR, PP 1920-1957 Tunis-el-Aouina 60720 36.48°N 10.17°E 36 TN, TX, RR, PP 1930-1957 <t< td=""><td></td><td>Oran</td><td>60461</td><td>35 70°N</td><td>0.65°W</td><td>53</td><td>TN TX RR PP</td><td>1852-1966</td></t<>		Oran	60461	35 70°N	0.65°W	53	TN TX RR PP	1852-1966
Tebessa 60475 35.4/2*N 8.137*E 863 TN, TX, RR, PP 1839-1938 Nemours (Ghazaouet) 60517 35.10*N 1.85°W 83 TN, TX, RR, PP 1879-1938 Sidi-Bel-Abbés 60520 35.20*N 0.63*W 476 TN, TX, RR, PP 1878-1938 Biskra 60525 34.85°N 5.72*E 125 TN, TX, RR, PP 1880-1938 Laghouat 60545 33.80*N 2.89*E 767 TN, TX, RR, PP 1888-1938 Geryville (El-Bayadh) 60550 33.68*N 1.00*E 1320 TN, TX, RR, PP 1892-1938 Tunisia Bizerte Cap Blanc 60714 37.33*N 09.82*E 6 TN, TX, RR, PP 1892-1957 Tunisia 60715 36.80*N 10.17*E 36 TN, TX, RR, PP 1925-1957 Kairouan 60720 36.44*N 11.11*E 82 RR 1907-1932 Jendouba Souk-el-Arba 60725 34.45*N 10.72*E 23 TN, TX, RR, PP 1830-1957		Oran-Can Falcon	60485	35.70 N	0.00 W	78	TN TX RR	1896_1938
Interest Control SJ. 72 N Like Color IN, TX, RR, PP 1878-1938 Sidi-Bel-Abbés 60520 35.02°N 0.63°W 476 TN, TX, RR, PP 1880-1938 Biskra 60525 34.85°N 5.72°E 125 TN, TX, RR, PP 1880-1938 Geryville (El-Bayadh) 60550 33.68°N 1.00°E 1320 TN, TX, RR, PP 1888-1938 Geryville (El-Bayadh) 60550 33.68°N 1.00°E 1320 TN, TX, RR, PP 1892-1938 Tunisia Bizerte Cap Blanc 60714 37.23°N 09.84°E 264 TN, TX, RR, PP 1892-1935 Tunis 60715 36.80°N 10.17°E 36 TN, TX, RR, PP 1892-1957 Tunis 60715 36.80°N 10.17°E 36 TN, TX, RR, PP 1946-1957 Kelibia 60720 36.84°N 11.11°E 82 RR 1907-1932 Jendouba Souk-el-Arba 60725 36.48°N 08.80°E 114 TN, TX, RR, PP 1946-1957		Tebessa	60475	35.42°N	8 12°F	863	TN TY DD DD	1870 1038
Kindbals Galaxies Galaxies Galaxies Galaxies Galaxies Biskra 60525 34.85°N 5.72°E 125 TN, TX, RR, PP 1880-1938 Laghouat 60545 33.80°N 2.89°E 767 TN, TX, RR, PP 1880-1938 El-Golea 60550 33.68°N 1.00°E 1320 TN, TX, RR, PP 1882-1938 El-Golea 60714 37.33°N 09.84°E 264 TN, TX, RR, PP 1892-1938 Tunisia Bizerte Karouba 60714 37.33°N 09.84°E 6 TN, TX, RR, PP 1920-1959 Tunis 60715 36.80°N 10.17°E 36 TN, TX, RR, PP 1920-1959 Kelibia 60725 36.83°N 10.23°E 4 TN, TX, RR, PP 1920-1957 Kelibia 60725 36.48°N 10.10°E 65 TN, TX, RR, PP 1946-1957 Kairouan 60750 34.72°N 10.72°E 23 TN, TX, RR, PP 1880-1938 Gabes 60769 33.8		Nemours (Chazaouet)	60517	35.10°N	0.12 L 1 85°\//	83	TN, TX, KK, FF	1878 1038
Starbar 60220 33.20 m 0.03 m 7.03 mm 10, 17, 18, 18 1000-1930 Biskra 60525 34.85°N 5.72°E 125 TN, TX, RR, PP 1880-1938 Geryville (El-Bayadh) 60550 33.68°N 1.00°E 1320 TN, TX, RR, PP 1889-1938 Tunisia Bizerte Cap Blanc 60714 37.33°N 09.84°E 264 TN, TX, RR, PP 1899-1961 Bizerte Karouba 60715 36.80°N 10.17°E 36 TN, TX, RR, PP 1899-1961 Bizerte Karouba 60715 36.80°N 10.17°E 36 TN, TX, RR, PP 1925-1957 Kelibia 60720 36.84°N 10.12°E 4 TN, TX, RR, PP 1946-1957 Kairouan 60725 36.48°N 10.10°E 65 TN, TX, RR, PP 1930-1957 Icidouba Souk-el-Arba 60760 33.95°N 81.1°E 50 TN, TX, RR, PP 1886-1933 Gabes 60765 33.86°N 10.07°E 112 TN, TX, RR, PP 1887-1957		Sidi-Bel-Abbás	60520	35.10 N	1.05 W	476	TN, TX, KK, FF	1880 1038
Lisha 60022 37.83 N 5.72 12.3 N, 7, 7, 7, 7, 7, 7, 7, 7, 7, 7, 7, 7, 7,		Bickra	60525	37 82°N	0.03 W	125	TN, TA, NA	1000-1930
Laginolat 60245 35.00 N 2.89 70 10.0		DISKId	60525	22 000N	3.72 E	125	TN, TA, KK, PP	1000-1930
Get yulie (EF-Bayduli) 60350 33.68*N 1.00* 1.920 TN, TX, RR 1086-1930 Tunisia Bizerte Cap Blanc 60714 37.33*N 09.84*E 264 TN, TX, RR, PP 1899-1961 Bizerte Karouba 60714 37.23*N 09.82*E 6 TN, TX, RR, PP 1899-1961 Tunis 60715 36.80*N 10.17*E 36 TN, TX, RR, PP 1920-1959 Tunis-el-Aouina 60715 36.80*N 10.23*E 4 TN, TX, RR, PP 1925-1957 Kelibia 60720 36.48*N 10.23*E 4 TN, TX, RR, PP 1946-1957 Kairouan 60735 35.67*N 10.10*E 65 TN, TX, RR, PP 1930-1957 El Djem 60743* 35.33*N 10.70*E 112 TN, TX, RR, PP 1897-1932 Jendouba Souk-el-Arba 60760 33.95*N 08.11*E 50 TN, TX, RR, PP 1897-1957 Djerba 60769 33.88*N 10.85*E 4 TN, TX, RR 1998-1912		Lagilouat Constille (El Reytadh)	005 4 5	22.60°N	2.09°E	1220	TN, TA, KR	1000-1930
El-Golea 60590 30.55^{N} 3.07 * 394 IN, IX, RK, PP 1892-1950 Tunisia Bizerte Cap Blanc 60714 37.33^N 09.84*E 264 TN, TX, RR, PP 1992-1959 Tunis 60715 36.80°N 10.17*E 36 TN, TX, RR, PP 1992-1959 Tunis 60715 36.80°N 10.17*E 36 TN, TX, RR, PP 1992-1957 Kelibia 60720 36.84°N 11.11°E 82 RR 1997-1932 Jendouba Souk-el-Arba 60725 35.67°N 10.10°E 65 TN, TX, RR, PP 1946-1957 Kairouan 60735 35.67°N 10.10°E 65 TN, TX, RR, PP 1946-1957 Tozeur 60760 33.93^N 10.70°E 12 TN, TX, RR, PP 1890-1951 Tozeur 60760 33.95°N 10.11°E 4 TN, TX, RR, PP 1886-1957 Tozeur 60769 33.88°N 10.85°E 4 TN, TX, RR 1942-1953 Libya Nalut			60550		1.00°E	1320	IN, IX, KK	1000-1930
Initial Dizerte Cap Blant OU/14 37.33*N O9.82*E 264 IN, IX, RR, PP 1929–1950 Bizerte Karouba 60714 37.23*N 09.82*E 6 TN, TX, RR, PP 1920–1959 Tunis 60715 36.80*N 10.17*E 36 TN, TX, RR, PP 1925–1957 Kelibia 60720 36.84*N 11.11*E 82 RR 1907–1932 Jendouba Souk-el-Arba 60725 36.48*N 08.80*E 144 TN, TX, RR, PP 1946–1957 Kairouan 60743* 35.33*N 10.70*E 112 TN, TX, RR, PP 1980–1932 Sfax 60760 33.95*N 10.10*E 65 TN, TX, RR, PP 1886–1957 Tozeur 60760 33.95*N 10.1*E 4 TN, TX, RR, PP 1887–1957 Djerba 60769 33.88*N 10.85*E 4 TN, TX, RR 1932–1953 Zuara 62007 32.88*N 12.08*E 51 TN, TX, RR 1932–1953 Tripoli Airport 6	Tunicio	El-GUIEd Bizarta Can Plana	60390	20.22 N	3.07°E	39 4 264	TN, TA, KR, PP	1092-1930
Bizerte Karouba 60/14 3.2.3°N 09.2°E 6 1N, 1X, RK, PP 1920-1959 Tunis 60715 36.80°N 10.17°E 36 TN, TX, RR 1886-1938 Tunis-el-Aouina 60715 36.80°N 10.17°E 36 TN, TX, RR 1925-1957 Kelibia 60720 36.84°N 11.11°E 82 RR 1907-1932 Jendouba Souk-el-Arba 60725 36.48°N 08.80°E 144 TN, TX, RR, PP 1946-1957 Kairouan 60735 35.67°N 10.10°E 65 TN, TX, RR, PP 1930-1957 El Djem 60743° 35.33°N 10.70°E 112 TN, TX, RR, PP 1887-1957 Tozeur 60760 33.95°N 08.11°E 50 TN, TX, RR, PP 1887-1957 Djerba 60765 33.89°N 10.11°E 4 TN, TX, RR 1932-1953 Zuara 62007 32.88°N 12.08°E 3 TN, TX, RR 1932-1953 Tripoli Airiport 62010 32.46°N <td>Tunisia</td> <td>Bizerte Cap Bianc</td> <td>60714</td> <td>37.33°N</td> <td>09.84°E</td> <td>204</td> <td>TN, TX, RR, PP</td> <td>1899-1961</td>	Tunisia	Bizerte Cap Bianc	60714	37.33°N	09.84°E	204	TN, TX, RR, PP	1899-1961
Iunis 60/15 36.80°N 10.17°E 36 TN, TX, RR 1886-1938 Kelibia 60715 36.83°N 10.23°E 4 TN, TX, RR, PP 1992-1957 Kelibia 60720 36.84°N 11.11°E 82 RR 1907-1932 Jendouba Souk-el-Arba 60725 36.48°N 08.80°E 144 TN, TX, RR, PP 1946-1957 Kairouan 60735 35.67°N 10.10°E 65 TN, TX, RR, PP 1930-1932 Sfax 60760 34.72°N 10.70°E 112 TN, TX, RR, PP 1886-1957 Tozeur 60760 33.95°N 08.11°E 50 TN, TX, RR, PP 1887-1957 Djerba 60769 33.88°N 10.85°E 4 TN, TX, RR 1932-1953 Zuara 62007 32.88°N 10.88°E 621 TN, TX, RR 1932-1955 Trípoli Airport 62010 32.67°N 13.15°E 81 TN, TX, RR 1922-1955 Kripoli Airport 62010 32.87°N		Bizerte Karouba	60714	37.23°N	09.82°E	6	TN, TX, RR, PP	1920-1959
Itunis-ei-Aoulina 60715 36.83°N 10.23°E 4 IN, IX, RR, PP 1925-1957 Kelibia 60720 36.84°N 11.11°E 82 RR 1907-1932 Jendouba Souk-el-Arba 60725 36.48°N 08.80°E 144 TN, TX, RR, PP 1946-1957 Kairouan 60735 35.67°N 10.10°E 65 TN, TX, RR, PP 1930-1957 El Djem 60743° 35.33°N 10.70°E 112 TN, TX, RR, PP 1986-1957 Tozeur 60760 33.95°N 08.11°E 50 TN, TX, RR, PP 1887-1957 Djerba 60769 33.88°N 10.11°E 4 TN, TX, RR 1932-1953 Zuara 62002 31.87°N 10.98°E 621 TN, TX, RR 1932-1955 Tripoli Airport 62010 32.67°N 13.15°E 81 TN, TX, RR 1943-1955 Kairouan 62010 32.98°N 13.15°E 81 TN, TX, RR 1925-1956 Jirpoli Sidi El Mesri 62010 <			60715	36.80°N	10.17°E	36	IN, IX, KK	1886-1938
Keilola 60720 36.84°N 11.11°E 82 RR 1907–1932 Jendouba Souk-el-Arba 60725 36.48°N 08.80°E 144 TN, TX, RR, PP 1946–1957 Kairouan 60735 35.67°N 10.10°E 65 TN, TX, RR, PP 1930–1957 El Djem 60743 ^a 35.33°N 10.70°E 112 TN, TX, RR, PP 1980–1957 Sfax 60760 33.95°N 08.11°E 50 TN, TX, RR, PP 1887–1957 Jerda 60765 33.89°N 10.11°E 4 TN, TX, RR, PP 1887–1957 Djerba 60769 33.88°N 10.11°E 4 TN, TX, RR 1932–1953 Libya Nalut 62007 32.88°N 10.208°E 3 TN, TX, RR 1943–1955 Tripoli Airport 62010 32.67°N 13.15°E 81 TN, TX, RR 1943–1955 Tripoli City 62010 32.90°N 13.18°E 25 TN, TX, RR 1925–1974 Misurata 62016		Tunis-ei-Aouina	60715	36.83°N	10.23°E	4	IN, IX, KK, PP	1925-1957
Jendouba Souk-el-Arba 60725 36.48°N 08.80°E 144 IN, TX, RR, PP 1946–1957 Kairouan 60735 35.67°N 10.10°E 65 TN, TX, RR, PP 1930–1957 El Djem 60743° 35.33°N 10.70°E 112 TN, TX, RR, PP 1886–1957 Sfax 60750 34.72°N 10.72°E 23 TN, TX, RR, PP 1887–1957 Tozeur 60760 33.95°N 08.11°E 50 TN, TX, RR, PP 1887–1957 Djerba 60769 33.89°N 10.11°E 4 TN, TX, RR 1932–1953 Zuara 62007 32.88°N 10.85°E 4 TN, TX, RR 1932–1953 Trípoli Airport 62010 32.67°N 13.15°E 81 TN, TX, RR 1943–1955 Trípoli Airport 62010 32.67°N 13.15°E 81 TN, TX, RR 1945–1956 Trípoli Sidi El Mesri 62010 32.89°N 13.18°E 25 TN, TX, RR 1925–1955 Sirte 62016 <t< td=""><td></td><td>Kelibia</td><td>60720</td><td>36.84°N</td><td>11.11°E</td><td>82</td><td></td><td>1907-1932</td></t<>		Kelibia	60720	36.84°N	11.11°E	82		1907-1932
Kairouan 60/35 35.6/°N 10.10°E 65 IN, IX, RR, PP 1930–195/ El Djem 60743° 35.33°N 10.70°E 112 TN, TX, RR, PP 1930–195/ Sfax 60750 34.72°N 10.72°E 23 TN, TX, RR, PP 1886–1957 Tozeur 60760 33.95°N 08.11°E 50 TN, TX, RR, PP 1887–1957 Djerba 60769 33.88°N 10.10°E 4 TN, TX, RR, PP 1887–1957 Zuara 62002 31.87°N 10.98°E 621 TN, TX, RR 1932–1953 Zuara 62007 32.88°N 12.08°E 3 TN, TX, RR 1932–1955 Trípoli Airport 62010 32.67°N 13.15°E 81 TN, TX, RR 1943–1955 Trípoli Sidi El Mesri 62010 32.87°N 13.22°E 5 TN, TX, RR 1925–1974 Misurata 62016 32.32°N 15.05°E 32 TN, TX, RR 1925–1974 Misurata 62016 32.32°N		Jendouba Souk-el-Arba	60725	36.48°N	08.80°E	144	IN, IX, RR, PP	1946-1957
El Djem 60/743° 35.33°N 10.70°E 112 TN, TX, RR 1900–1932 Sfax 60750 34.72°N 10.72°E 23 TN, TX, RR, PP 1886–1957 Tozeur 60760 33.95°N 08.11°E 50 TN, TX, RR, PP 1897–1938 Gabes 60765 33.89°N 10.11°E 4 TN, TX, RR, PP 1887–1957 Djerba 60769 33.88°N 10.85°E 4 TN, TX, RR 1932–1953 Zuara 62002 31.87°N 10.98°E 621 TN, TX, RR 1932–1953 Zuara 62007 32.88°N 12.08°E 3 TN, TX, RR 1943–1955 Trípoli Airport 62010 32.67°N 13.15°E 81 TN, TX, RR 1943–1955 Trípoli Sidi El Mesri 62010 32.87°N 13.20°E TN, TX, RR 1925–1974 Misurata 62010 32.90°N 13.18°E 25 TN, TX, RR 1925–1955 Benghazi Benina 62053 32.08°N 20.27°E 132 TN, TX, RR 1925–1955 Benghazi Regima (Ragma) 62		Kairouan	60/35	35.67°N	10.10°E	65	IN, IX, RR, PP	1930-1957
Stax 60/50 34.72°N 10.72°E 23 IN, IX, RR, PP 1886–1957 Tozeur 60760 33.95°N 08.11°E 50 TN, TX, RR, PP 1897–1938 Gabes 60765 33.89°N 10.11°E 4 TN, TX, RR, PP 1887–1957 Djerba 60769 33.88°N 10.85°E 4 TN, TX, RR 1988–1912 Libya Nalut 62002 31.87°N 10.98°E 621 TN, TX, RR 1932–1953 Zuara 62007 32.88°N 12.08°E 3 TN, TX, RR 1943–1955 Trípoli Airport 62010 32.67°N 13.15°E 81 TN, TX, RR 1943–1955 Trípoli Sidi El Mesri 62010 32.87°N 13.22°E 25 TN, TX, RR 1925–1974 Misurata 62010 32.90°N 13.18°E 25 TN, TX, RR 1925–1955 Benghazi Benina 62053 32.08°N 20.27°E 132 TN, TX, RR 1925–1955 Benghazi Regima (Ragma) 62053 <td></td> <td>El Djem</td> <td>60/43ª</td> <td>35.33°N</td> <td>10.70°E</td> <td>112</td> <td>IN, IX, RR</td> <td>1900–1932</td>		El Djem	60/43ª	35.33°N	10.70°E	112	IN, IX, RR	1900–1932
Iozeur 60760 33.95°N 08.11°E 50 IN, IX, RR, PP 1897–1938 Gabes 60765 33.89°N 10.11°E 4 TN, TX, RR, PP 1887–1957 Djerba 60769 33.88°N 10.85°E 4 TN, TX, RR 1898–1912 Libya Nalut 62002 31.87°N 10.98°E 621 TN, TX, RR 1932–1953 Zuara 62007 32.88°N 12.08°E 3 TN, TX, RR 1932–1953 Trípoli Airport 62010 32.67°N 13.15°E 81 TN, TX, RR 1943–1955 Trípoli Sidi El Mesri 62010 32.87°N 13.22°E 25 TN, TX, RR 1943–1955 Trípoli City 62010 32.90°N 13.18°E 25 TN, TX, RR 1925–1974 Misurata 62016 32.32°N 15.05°E 32 TN, TX, RR 1925–1955 Benghazi Benina 62053 32.08°N 20.27°E 132 TN, TX, RR 1925–1956 Jenghazi Regima (Ragma) 6205		Sfax	60750	34./2°N	10.72°E	23	IN, IX, RR, PP	1886-1957
Gabes 60765 33.89°N 10.11°E 4 TN, TX, RR, PP 1887–1957 Djerba 60769 33.88°N 10.85°E 4 TN, TX, RR 1898–1912 Libya Nalut 62002 31.87°N 10.98°E 621 TN, TX, RR 1932–1953 Zuara 62007 32.88°N 12.08°E 3 TN, TX, RR 1920–1955 Trípoli Airport 62010 32.67°N 13.15°E 81 TN, TX, RR 1943–1955 Trípoli Sidi El Mesri 62010 32.87°N 13.22°E 25 TN, TX, RR 1916–2008 Tripoli City 62010 32.90°N 13.18°E 25 TN, TX, RR 1925–1974 Misurata 62016 32.32°N 15.05°E 32 TN, TX, RR 1925–1955 Benghazi Benina 62053 32.08°N 20.27°E 132 TN, TX, RR 1925–1955 Benghazi Regima (Ragma) 62053 32.07°N 20.07°E 322 TN, TX, RR 1924–1955 Shahat 62056 </td <td></td> <td>lozeur</td> <td>60760</td> <td>33.95°N</td> <td>08.11°E</td> <td>50</td> <td>IN, IX, RR, PP</td> <td>1897-1938</td>		lozeur	60760	33.95°N	08.11°E	50	IN, IX, RR, PP	1897-1938
Djerba 60769 33.88°N 10.85°E 4 TN, TX, RR 1898–1912 Libya Nalut 62002 31.87°N 10.98°E 621 TN, TX, RR 1932–1953 Zuara 62007 32.88°N 12.08°E 3 TN, TX, RR 1920–1955 Trípoli Airport 62010 32.67°N 13.15°E 81 TN, TX, RR 1943–1955 Trípoli Sidi El Mesri 62010 32.87°N 13.22°E 25 TN, TX, RR 1916–2008 Tripoli City 62010 32.90°N 13.18°E 25 TN, TX, RR 1925–1974 Misurata 62016 32.32°N 15.05°E 32 TN, TX, RR 1925–1955 Sirte 62019 31.20°N 16.58°E 13 TN, TX, RR 1925–1955 Benghazi Benina 62053 32.07°N 20.07°E 322 TN, TX, RR 1922–1935 Agedabia 62055 30.72°N 20.17°E 7 TN, TX, RR 1924–1955 Shahat 62056 32.8		Gabes	60765	33.89°N	10.11°E	4	TN, TX, RR, PP	1887–1957
Libya Nalut 62002 31.87°N 10.98°E 621 TN, TX, RR 1932–1953 Zuara 62007 32.88°N 12.08°E 3 TN, TX, RR 1920–1955 Trípoli Airport 62010 32.67°N 13.15°E 81 TN, TX, RR 1943–1955 Trípoli Sidi El Mesri 62010 32.87°N 13.22°E 25 TN, TX, RR 1916–2008 Tripoli City 62010 32.90°N 13.18°E 25 TN, TX, RR 1925–1974 Misurata 62016 32.32°N 15.05°E 32 TN, TX, RR 1925–1956 Sirte 62019 31.20°N 16.58°E 13 TN, TX, RR 1925–1955 Benghazi Benina 62053 32.08°N 20.27°E 132 TN, TX, RR 1944–1955 Benghazi Regima (Ragma) 62053 32.07°N 20.07°E 322 TN, TX, RR 1922–1935 Agedabia 62055 30.72°N 20.17°E 7 TN, TX, RR 1924–1955 Shahat 62056 32.80°N 21.88°E 648 TN, TX, RR 1924–1955 Shahat 62056 32.80°N 21.88°E 648 TN, TX, RR 1924–1955 Shahat 62056 32.80°N 21.88°E 648 TN, TX, RR 1924–1955 Shahat 62056 32.80°N 21.88°E 4 TN, TX, RR 1924–1955 Shahat 62056 31.33°N 27.22°E 25 TN, TX, RR, PP 1919–1957 Mersa Matruh 62306 31.33°N 27.22°E 25 TN, TX, RR, PP 1920–1957 Port Said 6233 31.28°N 32.23°E 6 TN, TX, RR, PP 1884–1957		Djerba	60769	33.88°N	10.85°E	4	TN, TX, RR	1898–1912
Zuara 62007 32.88°N 12.08°E 3 TN, TX, RR 1920–1955 Trípoli Airport 62010 32.67°N 13.15°E 81 TN, TX, RR 1943–1955 Trípoli Sidi El Mesri 62010 32.87°N 13.22°E 25 TN, TX, RR 1916–2008 Tripoli City 62010 32.90°N 13.18°E 25 TN, TX, RR 1925–1974 Misurata 62016 32.32°N 15.05°E 32 TN, TX, RR 1925–1956 Sirte 62019 31.20°N 16.58°E 13 TN, TX, RR 1925–1955 Benghazi Benina 62053 32.08°N 20.27°E 132 TN, TX, RR 1925–1955 Benghazi Regima (Ragma) 62053 32.07°N 20.07°E 322 TN, TX, RR 1922–1935 Agedabia 62055 30.72°N 20.17°E 7 TN, TX, RR 1924–1955 Shahat 62056 32.80°N 21.88°E 648 TN, TX, RR 1921–1955 Derna 62059 32.76°N 22.66°E 10 TN, TX, RR 1928–1955 Salloum <td>Libya</td> <td>Nalut</td> <td>62002</td> <td>31.87°N</td> <td>10.98°E</td> <td>621</td> <td>TN, TX, RR</td> <td>1932–1953</td>	Libya	Nalut	62002	31.87°N	10.98°E	621	TN, TX, RR	1932–1953
Trípoli Airport 62010 32.67°N 13.15°E 81 TN, TX, RR 1943–1955 Trípoli Sidi El Mesri 62010 32.87°N 13.22°E 25 TN, TX, RR 1916–2008 Tripoli City 62010 32.90°N 13.18°E 25 TN, TX, RR 1925–1974 Misurata 62016 32.32°N 15.05°E 32 TN, TX, RR 1925–1956 Sirte 62019 31.20°N 16.58°E 13 TN, TX, RR 1925–1955 Benghazi Benina 62053 32.08°N 20.27°E 132 TN, TX, RR 1925–1955 Benghazi Regima (Ragma) 62053 32.07°N 20.07°E 322 TN, TX, RR 1922–1935 Agedabia 62055 30.72°N 20.17°E 7 TN, TX, RR 1924–1955 Shahat 62056 32.80°N 21.88°E 648 TN, TX, RR 1921–1955 Derna 62059 32.76°N 22.66°E 10 TN, TX, RR 1928–1955 Egypt Salloum 62300 31.55°N 25.18°E 4 TN, TX, RR, PP 1919–1957		Zuara	62007	32.88°N	12.08°E	3	TN, TX, RR	1920–1955
Trípoli Sidi El Mesri 62010 32.87°N 13.22°E 25 TN, TX, RR 1916–2008 Tripoli City 62010 32.90°N 13.18°E 25 TN, TX, RR 1925–1974 Misurata 62016 32.32°N 15.05°E 32 TN, TX, RR 1925–1956 Sirte 62019 31.20°N 16.58°E 13 TN, TX, RR 1925–1955 Benghazi Benina 62053 32.08°N 20.27°E 132 TN, TX, RR 1925–1955 Benghazi Regima (Ragma) 62053 32.08°N 20.27°E 132 TN, TX, RR 1924–1955 Agedabia 62055 30.72°N 20.07°E 322 TN, TX, RR 1922–1935 Shahat 62056 32.80°N 21.88°E 648 TN, TX, RR 1921–1955 Derna 62059 32.76°N 22.66°E 10 TN, TX, RR 1928–1955 Egypt Salloum 62300 31.55°N 25.18°E 4 TN, TX, RR, PP 1919–1957 Mersa Matruh 623		Trípoli Airport	62010	32.67°N	13.15°E	81	TN, TX, RR	1943–1955
Tripoli City 62010 32.90°N 13.18°E 25 TN, TX, RR 1925–1974 Misurata 62016 32.32°N 15.05°E 32 TN, TX, RR 1925–1956 Sirte 62019 31.20°N 16.58°E 13 TN, TX, RR 1925–1955 Benghazi Benina 62053 32.08°N 20.27°E 132 TN, TX, RR 1922–1935 Benghazi Regima (Ragma) 62053 32.07°N 20.07°E 322 TN, TX, RR 1922–1935 Agedabia 62055 30.72°N 20.17°E 7 TN, TX, RR 1924–1955 Shahat 62056 32.80°N 21.88°E 648 TN, TX, RR 1921–1955 Derna 62059 32.76°N 22.66°E 10 TN, TX, RR 1928–1955 Egypt Salloum 62300 31.55°N 25.18°E 4 TN, TX, RR, PP 1919–1957 Mersa Matruh 62306 31.33°N 27.22°E 25 TN, TX, RR, PP 1920–1957 Port Said 62333 31.28°N 32.23°E 6 TN, TX, RR, PP 1824–1957		Trípoli Sidi El Mesri	62010	32.87°N	13.22°E	25	TN, TX, RR	1916–2008
Misurata 62016 32.32°N 15.05°E 32 TN, TX, RR 1925–1956 Sirte 62019 31.20°N 16.58°E 13 TN, TX, RR 1925–1955 Benghazi Benina 62053 32.08°N 20.27°E 132 TN, TX, RR 1944–1955 Benghazi Regima (Ragma) 62053 32.07°N 20.07°E 322 TN, TX, RR 1922–1935 Agedabia 62055 30.72°N 20.17°E 7 TN, TX, RR 1924–1955 Shahat 62056 32.80°N 21.88°E 648 TN, TX, RR 1921–1955 Derna 62059 32.76°N 22.66°E 10 TN, TX, RR 1928–1955 Egypt Salloum 62300 31.55°N 25.18°E 4 TN, TX, RR, PP 1919–1957 Mersa Matruh 62306 31.33°N 27.22°E 25 TN, TX, RR, PP 1920–1957 Port Said 62333 31.28°N 32.23°E 6 TN, TX, RR, PP 1884–1957 <td></td> <td>Tripoli City</td> <td>62010</td> <td>32.90°N</td> <td>13.18°E</td> <td>25</td> <td>TN, TX, RR</td> <td>1925–1974</td>		Tripoli City	62010	32.90°N	13.18°E	25	TN, TX, RR	1925–1974
Sirte 62019 31.20°N 16.58°E 13 TN, TX, RR 1925–1955 Benghazi Benina 62053 32.08°N 20.27°E 132 TN, TX, RR 1944–1955 Benghazi Regima (Ragma) 62053 32.07°N 20.07°E 322 TN, TX, RR 1924–1935 Agedabia 62055 30.72°N 20.17°E 7 TN, TX, RR 1924–1955 Shahat 62056 32.80°N 21.88°E 648 TN, TX, RR 1924–1955 Derna 62059 32.76°N 22.66°E 10 TN, TX, RR 1928–1955 Egypt Salloum 62300 31.55°N 25.18°E 4 TN, TX, RR, PP 1919–1957 Mersa Matruh 62306 31.33°N 27.22°E 25 TN, TX, RR, PP 1920–1957 Port Said 62333 31.28°N 32.23°E 6 TN, TX, RR, PP 1884–1957		Misurata	62016	32.32°N	15.05°E	32	TN, TX, RR	1925–1956
Benghazi Benina 62053 32.08°N 20.27°E 132 TN, TX, RR 1944–1955 Benghazi Regima (Ragma) 62053 32.07°N 20.07°E 322 TN, TX, RR 1922–1935 Agedabia 62055 30.72°N 20.17°E 7 TN, TX, RR 1924–1955 Shahat 62056 32.80°N 21.88°E 648 TN, TX, RR 1924–1955 Derna 62059 32.76°N 22.66°E 10 TN, TX, RR 1928–1955 Egypt Salloum 62300 31.55°N 25.18°E 4 TN, TX, RR, PP 1919–1957 Mersa Matruh 62306 31.33°N 27.22°E 25 TN, TX, RR, PP 1920–1957 Port Said 62333 31.28°N 32.23°E 6 TN, TX, RR, PP 1884–1957		Sirte	62019	31.20°N	16.58°E	13	TN, TX, RR	1925–1955
Benghazi Regima (Ragma) 62053 32.07°N 20.07°E 322 TN, TX, RR 1922–1935 Agedabia 62055 30.72°N 20.17°E 7 TN, TX, RR 1924–1955 Shahat 62056 32.80°N 21.88°E 648 TN, TX, RR 1921–1955 Derna 62059 32.76°N 22.66°E 10 TN, TX, RR 1928–1955 Egypt Salloum 62300 31.55°N 25.18°E 4 TN, TX, RR, PP 1919–1957 Mersa Matruh 62306 31.33°N 27.22°E 25 TN, TX, RR, PP 1920–1957 Port Said 62333 31.28°N 32.23°E 6 TN, TX, RR, PP 1884–1957		Benghazi Benina	62053	32.08°N	20.27°E	132	TN, TX, RR	1944–1955
Agedabia 62055 30.72°N 20.17°E 7 TN, TX, RR 1924–1955 Shahat 62056 32.80°N 21.88°E 648 TN, TX, RR 1921–1955 Derna 62059 32.76°N 22.66°E 10 TN, TX, RR 1921–1955 Egypt Salloum 62300 31.55°N 25.18°E 4 TN, TX, RR, PP 1919–1957 Mersa Matruh 62306 31.33°N 27.22°E 25 TN, TX, RR, PP 1920–1957 Port Said 62333 31.28°N 32.23°E 6 TN, TX, RR, PP 1884–1957		Benghazi Regima (Ragma)	62053	32.07°N	20.07°E	322	TN, TX, RR	1922–1935
Shahat 62056 32.80°N 21.88°E 648 TN, TX, RR 1921–1955 Derna 62059 32.76°N 22.66°E 10 TN, TX, RR 1928–1955 Egypt Salloum 62300 31.55°N 25.18°E 4 TN, TX, RR, PP 1919–1957 Mersa Matruh 62306 31.33°N 27.22°E 25 TN, TX, RR, PP 1920–1957 Port Said 62333 31.28°N 32.23°E 6 TN, TX, RR, PP 1884–1957		Agedabia	62055	30.72°N	20.17°E	7	TN, TX, RR	1924–1955
Derna 62059 32.76°N 22.66°E 10 TN, TX, RR 1928–1955 Egypt Salloum 62300 31.55°N 25.18°E 4 TN, TX, RR, PP 1919–1957 Mersa Matruh 62306 31.33°N 27.22°E 25 TN, TX, RR, PP 1920–1957 Port Said 62333 31.28°N 32.23°E 6 TN, TX, RR, PP 1884–1957		Shahat	62056	32.80°N	21.88°E	648	TN, TX, RR	1921–1955
Egypt Salloum 62300 31.55°N 25.18°E 4 TN, TX, RR, PP 1919–1957 Mersa Matruh 62306 31.33°N 27.22°E 25 TN, TX, RR, PP 1920–1957 Port Said 62333 31.28°N 32.23°E 6 TN, TX, RR, PP 1884–1957		Derna	62059	32.76°N	22.66°E	10	TN, TX, RR	1928-1955
Mersa Matruh 62306 31.33°N 27.22°E 25 TN, TX, RR, PP 1920–1957 Port Said 62333 31.28°N 32.23°E 6 TN, TX, RR, PP 1884–1957	Egypt	Salloum	62300	31.55°N	25.18°E	4	TN, TX, RR. PP	1919–1957
Port Said 62333 31.28°N 32.23°E 6 TN, TX, RR, PP 1884–1957	571-	Mersa Matruh	62306	31.33°N	27.22°E	25	TN, TX, RR, PP	1920–1957
		Port Said	62333	31.28°N	32.23°E	6	TN, TX, RR, PP	1884–1957

(continued)

Table 2.	(continued).
----------	--------------

Country	Location/Station name	WMO code	Latitude	Longitude	Altitude (m)	Variables	Length
	Cairo Abbassia	62371	30.08°N	31.29°E	30	TN, TX, RR	1900–1908
	Cairo Ezbekiya	62374	30.05°N	31.25°E	20	TN, TX, RR	1909–1957
	Giza (Cairo)	62375	30.03°N	31.21°E	28	TN, TX, RR	1924–1957
	Helwan (Cairo)	62378	29.86°N	31.34°E	116	TN, TX, RR, PP	1904–1957
	Siwa	62417	29.20°N	25.48°E	-15	TN, TX, RR, PP	1912–1957
	Ismailia	62441	30.60°N	32.23°E	10	TN, TX, RR, PP	1884–1956
	El Suez	62450	29.93°N	32.55°E	10	TN, TX, RR, PP	1907–1957
Cyprus	Paphos	17600	34.77°N	32.43°E	30	TN, TX, RR	1901–1922
	Nicosia	17607	35.19°N	33.37°E	152	TN, TX, RR, PP	1881–1922
Lebanon	Rayack	40102	33.85°N	36.00°E	920	RR	1928–1970
	Trípoli	40103	34.45°N	35.82°E	20	RR	1931–1970
	Les Cedres (Al Arz)	40105	34.25°N	36.05°E	1925	RR	1939–1964
	Ksara	40106	33.82°N	35.89°E	918	TN, TX, RR, PP	1912–1971
	Hermes	40108 ^a	34.40°N	36.38°E	700	RR	1932–1970
	Rachaya	40109 ^a	33.50°N	35.85°E	1235	RR	1933–1970
Syria	Jarablus	40005	36.82°N	38.00°E	350	TN, TX, RR	1928–1975
-	Aleppo	40007	36.18°N	37.22°E	390	TN, TX, RR	1955–1975
	Lattakia	40022	35.50°N	35.78°E	7	RR	1928–1975
	Tartous	40050	34.90°N	35.87°E	5	RR	1928–1975
	Homs	40055	34.75°N	36.72°E	487	TN, TX, RR	1914–1959
	Palmyra	40061	34.55°N	38.30°E	404	TN, TX, RR	1928–1975
	Damascus	40079	33.48°N	36.23°E	720	TN, TX, RR	1928–1955
	Dara'a	40095	32.60°N	36.10°E	532	TN, TX, RR	1928–1933

TX, daily maximum temperature; TN, daily minimum temperature; RR, daily precipitation amount; PP, sub-daily air pressure observations. aWMO pseudo-code.



Figure 1. Location of sites for which data rescue was exercised; some sites comprise more than one station (see Table 2 for details).

To deal with potential data source errors, ancillary data/information details were sought in the data books: data from nearby stations, the general weather setting (e.g. cloudiness, rainfall, wind direction/ strength, weather charts), and reports of extreme meteorological events. If the information gathered could support the credibility of an unusual/suspicious datum value, the datum was left unchanged. Otherwise, a datum value change was made by setting it to a missing value (–99.9), unless the correct original value could be deduced from the ancillary information using expert judgement. The latter correction was

made in certain cases, such as the swapping of Tx and Tn data, the adjustment of temperature values by multiples of 10° C, the derivation of the correct pressure value from the isobar lines drawn on the accompanying weather charts (if available). It should be noted that the data source error correction scheme was a conservative one: changes were made only when the data values appeared to be clearly unrealistic and replacement values were inserted when there was a strong certainty about them (based on the consultation of ancillary information). Overall, 0.5% of the data digitized were eventually corrected through the

	Suspicious values				Corrected values				
							Data source errors		
Parameters	Total	Tolerance test	Temporal coherency	Internal consistency	Total	Transcription errors	Total	New values	Missing values
TN, TX, RR PP All data	5563 7987 13550	52% 16%	10% 84%	38%	3908 5772 9680	2244 5727 7971	1662 45 1707	864 42 906	798 3 801

Table 3. Results summary of the quality controls' (QC) applied to the daily minimum temperature (TN), daily maximum temperature (TX), daily precipitation (RR), hourly air surface pressure (PP) series.

multi-stage QC procedure, with ~10% of them corresponding to data source error correction (half of these corrections involved substitution with missing values, while for the rest a new, corrected value was introduced, as explained above). A summary of the automatic QC results is provided in Table 3 and their traceability ensured by the accompanying documentation to the dataset provided as supporting information to this article (C3-EURO4M-MEDARE_document-ingQC.txt).

Figure 2 shows the data volumes recovered per climatic variable and year. For Oran station, with the

most ancient data recovery, there are years with data since the 1850s (Figure 3). Several other stations have data series starting in the late 1870s and 1880s, and the yearly amount of data then increases till the mid-1930s. The data recovery is limited over the Second World War period, increases again in the 1950s and is of only a modest amount in the 1960s–1970s. Only for one station in Libya, at Tripoli (Sidi El Mesri), the data recovery extended into the 1980s and 2000s (Figure 4). Missing volumes in the data source collections used led to distinct data amount minima for some years within the







Figure 3. Data recovery (number of daily data per year) of daily maximum temperatures (TX) for Oran, showing data gaps both at the annual and interannual scales.



Figure 4. Time series of recovered daily maximum temperatures (TX), daily minimum temperatures (TN) and daily precipitation totals (RR), for Tripoli (Sidi el Mesri) in Libya.

recovery period (as shown in Figure 2). The rightmost column in Table 2 provides the data temporal range for every station recovered. Despite the use of multiple data sources to achieve an as complete as possible recovery of station data, the station series still have missing daily data and certain multiyear gaps exist within their temporal span (see Figures 3 and 4). Much of the missing data in from the last 3–4 decades and these data are likely digitized in National Meteorological Service (NMS) archives. Unfortunately, at present, these daily data series are not freely available.

3. Dataset structure and future prospects

The quality-controlled dataset developed comprises daily data for the 79 stations selected. The dataset consists of four data files, each of them including all station time series for each of the climatic variables targeted (TN, TX, RR and PP) in ASCII format. Data values in these times series run continuously from the starting year (1852) to the final year (2008) of the data recovery period, even if in some intervals (days, months, or years) there were no data recovered: missing data values (i.e. –99.9) were used for those data gaps. While the minimum/maximum temperature and precipitation data are accompanied by the respective date data (year, month, day of month), for air pressure data the observational hour is additionally provided.

The dataset is accompanied by a 'readme' file with information on the data file format and the station meta-data: station names, approximate WMO codes, geographical coordinates, climatic variables recovered, data period ranges, data sources used, time coordinates of observational times (local or UTC) and the periods with original (unadjusted to sea level) air pressure data.

All the dataset files are available from the ZENODO repository (http://www.zenodo.org/), while the station time series are also available from the ECA&D website (http://www.ecad.eu/).

This new dataset developed aims to cover a major data gap which has limited our knowledge on longterm climate variability in the southern and eastern Mediterranean regions. Although one of the station records recovered goes back in time to the mid-19th century, most of the time series start in the late 19th century or early 20th century and are far from being continuous with many data gaps remaining to be filled. It is expected that after merging the time series included in the C3-EURO4M-MEDARE dataset, combining them with additional digital data from other data-banks (principally NMS databases to cover the data gaps in recent decades), and once the temperature and precipitation series are subjected to homogenization, the time series will provide an advanced insight into the history of the Mediterranean climate.

Acknowledgements

The dataset development was funded by the European Union, Seventh Framework Programme (FP7/ 2007-2013) under grant agreement no. 242093 (European Reanalysis and Observations for Monitoring – EURO4M project). CIRCE has been a project funded by the European Union (FP6/2002-2006, n0 036961). Olivier Mestre and Sylvie Jourdain provided the CIRCE Tunisian data. Khalid Ibrahim El Fadli provided the LNMC data for Libya. David Mallol, Clara Lopez, Gisela Ponce, Nilo Nagera, Alberto Fernández, Victor Vidal, Juan Jose Ferreras, Mireia Sánchez, Nolia Tomás, Roger Dobon, Sara Barceló, all of them students at URV, have contributed to the dataset development by digitizing data books and performing the initial data quality control.

References

- Aguilar E, Prohom M. 2011. RClimDex-extraQC (EXTRAQC Quality Control Software). User Manual, Centre for Climate Change, University Rovira i Virgili, Tarragona, Spain. http://www.c3.urv.cat/data/manual/Manual_rclim dex_extraQC.r.pdf (accessed 4 November 2013).
- Allan R, Brohan P, Compo GP, Stone R, Luterbacher J, Brönnimann S. 2011. The international atmospheric cir-

culation reconstructions over the earth (ACRE) initiative. Bulletin of the American Meteorological Society **92**: 1421–1425, doi:10.1175/2011BAMS3218.1.

- Brunet M, Jones PD, Jourdain S, Efthymiadis D, Kerrouche M, Boroneant C. 2013. Data sources for rescuing the rich heritage of Mediterranean historical surface climate data. *Geoscience Data Journal*, doi:10.1002/gdj3.4.
- Centre for Climate Change (C3). 2013. C3-EURO4M-ME-DARE Mediterranean historical climate data. Version 1.0. ZENODO: Geneva. doi:10.5281/zenodo.7531.
- Jourdain S, Dandin P. 2011. AAA project: French historical climate and weather observations rescue. Presentation at 4th ACRE Workshop, KNMI, De Bilt, September 2011. http://www.euro4m.eu/Presentations_ACRE/Jourdain_De_Bilt_projetAAA.pdf (accessed 4 November 2013).
- Zhang X, Yang F. 2004. RClimDex (1.0). User Manual, Climate Research Branch, Environment Canada, Downsview, Ontario, Canada. http://etccdi.pacificclimate.org/ RClimDex/RClimDexUserManual.doc (accessed 4 November 2013).