Key mediterranean climate records Metadata inventories

France

Sylvie Jourdain, Météo-France

WMO/MEDARE International Wokshop
10-12 May Nicosia, Cyprusy

METEO FRANCE
Toujours un temps d'avance

What Medare data is targeting ?

- **INSTRUMENTAL DATA FOR ESSENTIAL CLIMATE VARIABLES (TEMP, PREC,PRESSURE, WATER VAPOUR, WIND, ETC.) THE LONGEST RECORDS AVAILABLE, BUT WITH ENOUGH SPATIAL RESOLUTION : professional stations**

- **USEFUL EVEN AT NATIONAL SCALES AS A HIGH-QUALITY INPUT TO VALIDATE RCMs' OUTPUTS OR GENERATE CLIMATE CHANGE SCENARIOS AND ASSESSING SECTORAL IMPACTS**

Question : resolution required ? Problem with rainfall in the South of France because of the relief and the spatial variability

Sources of french old meteorological observation

- **Early meteorological networks (**18 th century)
  - Mannheim Societas meteorologica Palatina, Société Royale de Médecine
  - Astronomical observatories,
  - Diaries of booksellers ..

- **Networks in the 19th century**
  - Military hospital in France and overseas
  - School (from 1850 to 1945)
  - Civil service (water and forest, flood, telegraph ..)
  - Astronomical observatories most of them begin after 1880 except Paris, Lyon Marseille and Toulouse

Long series at Météo-France

long term climate series depend on the French meteorology history

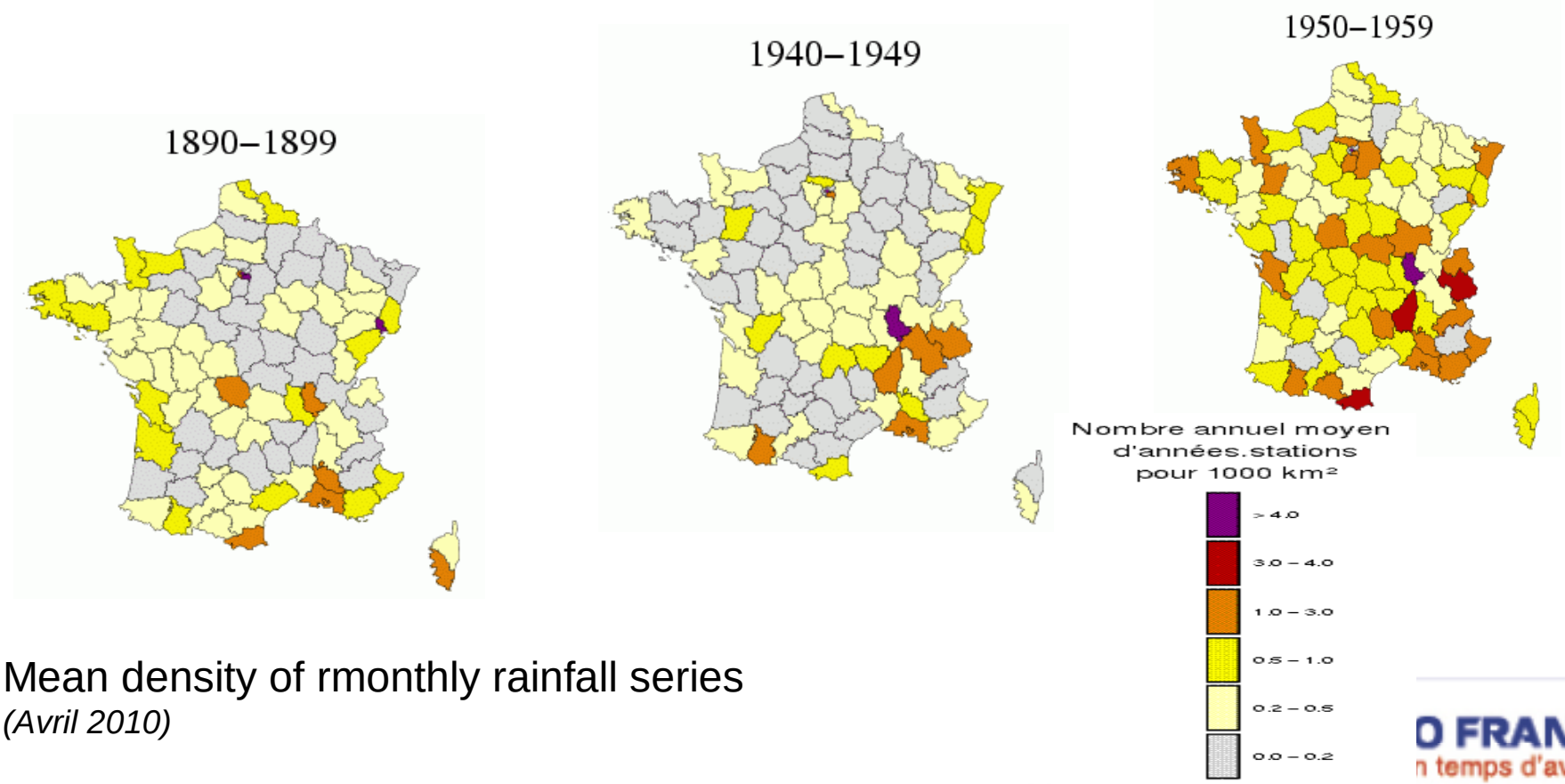
Key dates

- 1878 : Bureau central météorologique 1878, firts meteorological office network based on astronomical observatories
- 1919 : Office National de la Météorologie with new professional network in 1920 (17 stations)
- 1945 Météorologie nationale 100 professional (civil and miltary airports)

Avaibility of old meteorological observations

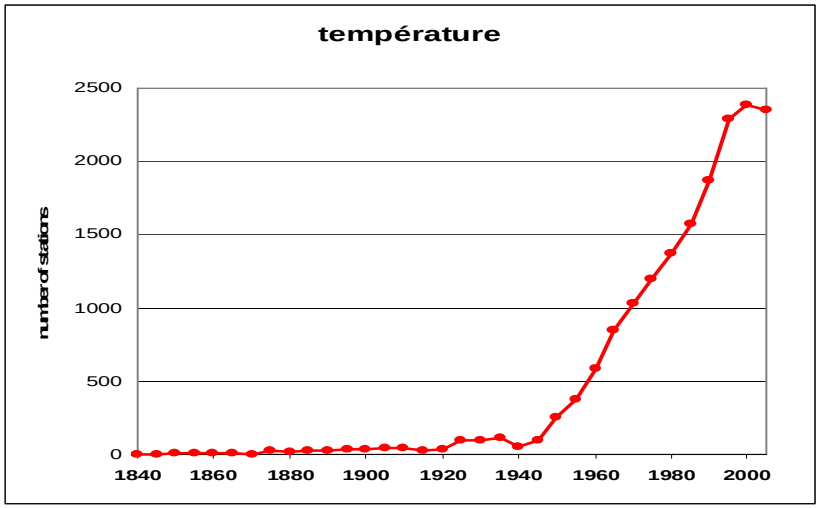
Rainfall in Paris à ème siècle dans la BDCLIM mais 530 stations avec des précipitations mensuelles en 1870

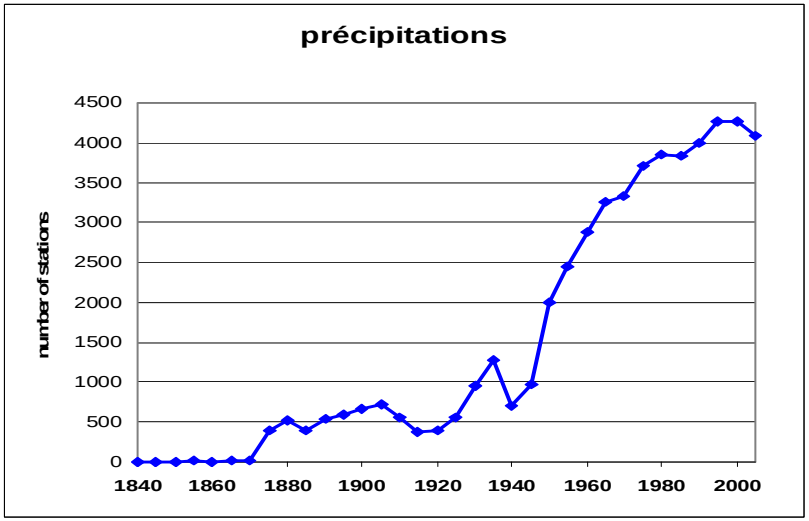
mais seulement 30 stations avec des données quotidiennes dans la BDCLIM



Mean density of rmonthly rainfall series
(Avril 2010)

Daily observations in BDCLIM





Daily Temperature
40 stations in 1900
260 stations in 1950
2350 stations in 2005

Daily rainfall
670 stations in1900
2000 stations in 1950
4090 stations in 2005

Data before 1875 are rare in the BDCLIM database

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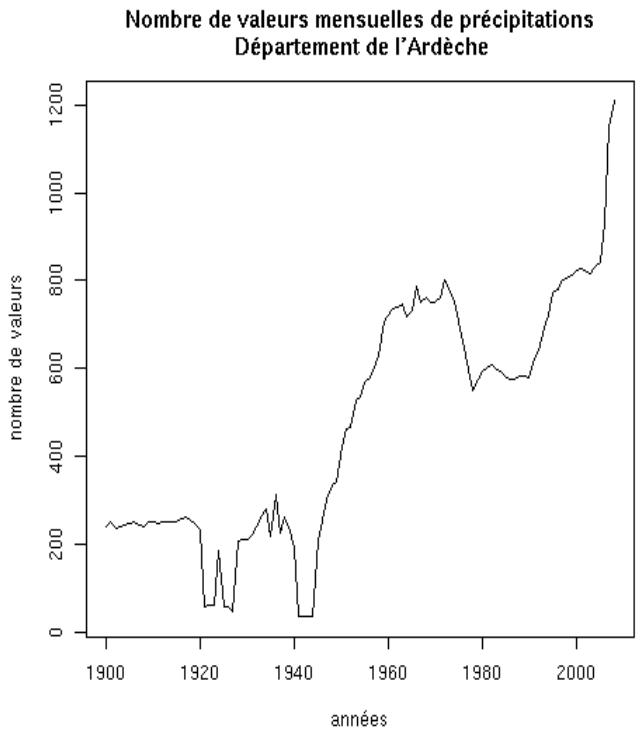
Toujours un temps d'avance

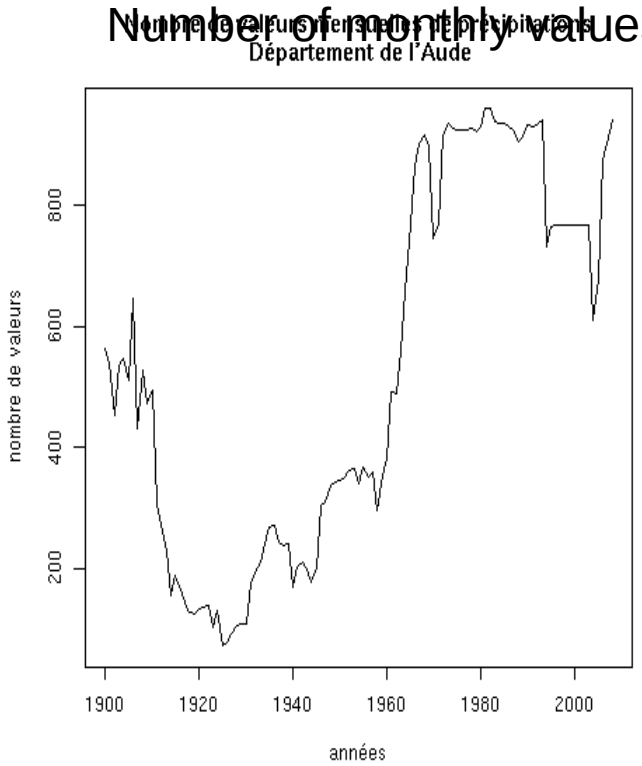
Monthly rainfall avaibility in the BDCLIM
Two Examples in the Soutn of France

Number of monthly values



ARDECHE (Privas Cévennes)

Number of monthly values



AUDE
Carcasson
ne)

METEO FRANCE
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Long term series for MEDARE Data Portal

- MARIGNANE (Marseille airport)
- MONTPELLIER
- NICE
- TOULOUSE
- PERPIGNAN

5 synoptical professional reliable stations since decades

5 airports

Essential Climate Variables available every 3 hours since 1946 for all stations

Astronomical meteorological series or school series enable to create long term series of daily and subdaily data (pressure and temperature)

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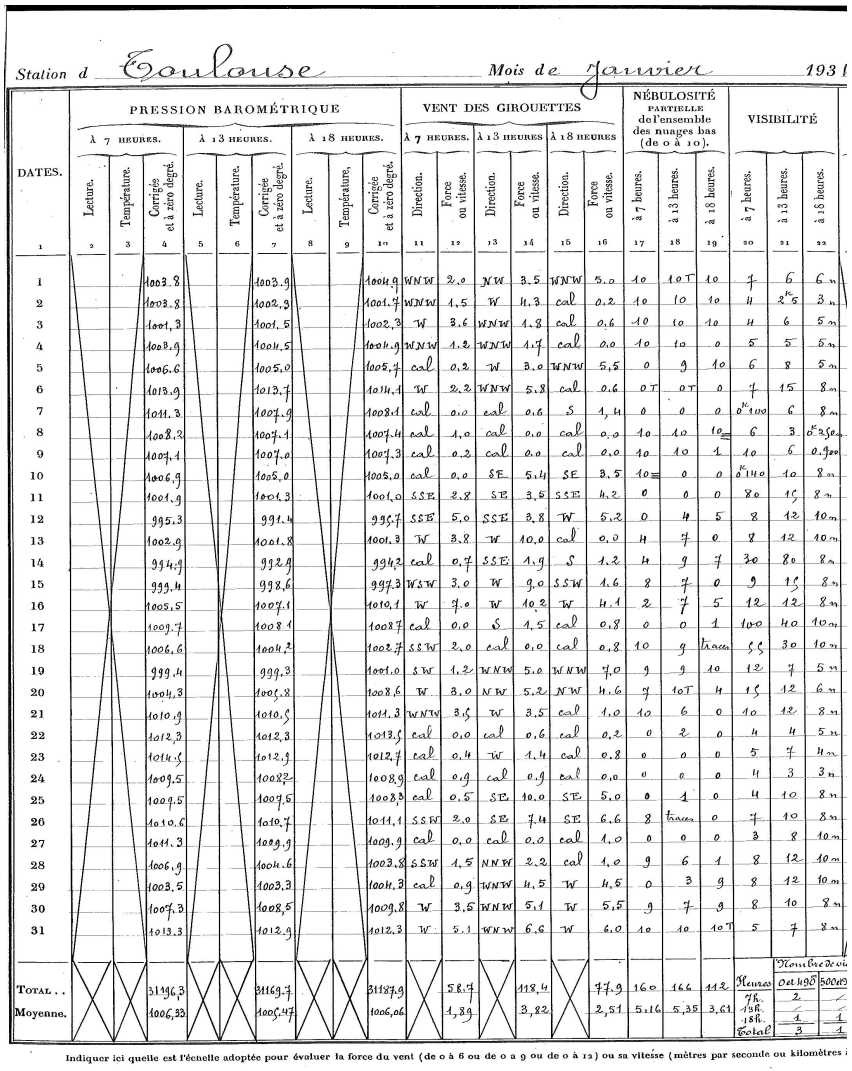
Toujours un temps d'avance

Subdaily data hours

Toulouse Francazal1934 handwritten observations



Station d Toulouse Mois de Janvier 193 I

DATES.	PRESSION BAROMÉTRIQUE à 7 heures. Lecture.	à 7 heures. Température.	à 7 heures. Corrigée et à zéro degré.	à 13 heures. Lecture.	à 13 heures. Température.	à 13 heures. Corrigée et à zéro degré.	à 18 heures. Lecture.	à 18 heures. Température.	à 18 heures. Corrigée et à zéro degré.	VENT DES GIROUETTES à 7 heures. Direction.	à 7 heures. Force ou vitesse.	à 13 heures. Direction.	à 13 heures. Force ou vitesse.	à 18 heures. Direction.	à 18 heures. Force ou vitesse.	NÉBULOSITÉ PARTIELLE de l'ensemble des nuages bas (de 0 à 10). à 7 heures.	à 13 heures.	à 18 heures.	VISIBILITÉ à 7 heures.	à 13 heures.	à 18 heures.
1			1003.8			1003.9			1004.0	WNW	2.0	NW	3.5	WNW	5.0	10	10T	10	7	6	6 m
2			1003.8			1002.3			1001.7	WNW	1.5	W	4.3	cal	0.2	10	10	10	4	2K5	3 m
3			1001.3			1001.5			1002.3	W	3.6	WNW	1.8	cal	0.6	10	10	10	4	6	5 m
4			1008.9			1004.5			1004.9	WNW	1.2	WNW	1.7	cal	0.0	10	10	0	5	5	5 m
5			1006.6			1005.0			1005.7	cal	0.2	W	3.0	WNW	5.5	0	9	10	6	8	5 m
6			1013.9			1013.7			1011.1	W	2.2	WNW	5.8	cal	0.6	0T	0T	0	7	15	8 m
7			1011.3			1007.9			1008.1	cal	0.0	cal	0.6	S	1.4	0	0	0	0K100	6	8 m
8			1008.3			1007.1			1007.4	cal	1.0	cal	0.0	cal	0.0	10	10	10	6	3	0K250
9			1007.1			1007.0			1007.3	cal	0.2	cal	0.0	cal	0.0	10	10	1	10	6	0.700
10			1006.9			1005.0			1005.0	cal	0.0	SE	5.4	SE	3.5	10	0	0	0K140	10	8 m
11			1001.9			1001.3			1001.0	SSE	2.8	SE	3.5	SSE	4.2	0	0	0	80	15	8 m
12			995.3			991.4			995.7	SSE	5.0	SSE	3.8	W	5.2	0	4	5	8	12	10 m
13			1002.9			1001.8			1001.3	W	3.8	W	10.0	cal	0.0	4	7	0	8	12	10 m
14			994.9			992.9			994.2	cal	0.7	SSE	1.9	S	1.2	4	9	7	30	80	8 m
15			999.4			998.6			997.3	WSW	3.0	W	9.0	SSW	1.6	8	7	0	9	15	8 m
16			1005.5			1007.1			1010.1	W	7.0	W	10.2	W	4.1	2	7	5	12	12	8 m
17			1009.7			1008.1			1008.7	cal	0.0	S	1.5	cal	0.8	0	0	1	100	40	10 m
18			1006.6			1004.2			1002.7	SSW	2.0	cal	0.0	cal	0.8	10	9	trace	55	30	10 m
19			999.4			999.3			1001.0	SW	1.2	WNW	5.0	WNW	7.0	9	9	10	12	7	5 m
20			1004.3			1005.8			1008.6	W	3.0	NW	5.2	NW	4.6	7	10T	4	15	12	6 m
21			1010.9			1010.5			1011.3	WNW	3.5	W	3.5	cal	1.0	10	6	0	10	12	8 m
22			1012.3			1012.3			1013.5	cal	0.0	cal	0.6	cal	0.2	0	2	0	4	4	5 m
23			1014.5			1012.9			1012.7	cal	0.4	W	1.4	cal	0.8	0	0	0	5	7	4 m
24			1009.5			1008.2			1008.9	cal	0.9	cal	0.9	cal	0.0	0	0	0	4	3	3 m
25			1009.5			1009.5			1008.3	cal	0.5	SE	10.0	SE	5.0	0	1	0	4	10	8 m
26			1010.6			1010.7			1011.1	SSW	2.0	SE	7.4	SE	6.6	8	trace	0	7	10	8 m
27			1011.3			1009.9			1009.9	cal	0.0	cal	0.0	cal	1.0	0	0	0	3	8	10 m
28			1006.9			1004.6			1003.8	SSW	1.5	NW	2.2	cal	1.0	9	6	1	8	12	10 m
29			1003.5			1003.3			1004.3	cal	0.9	WNW	4.5	W	4.5	0	3	9	8	12	10 m
30			1007.3			1008.5			1009.8	W	3.5	WNW	5.1	W	5.5	9	7	9	8	10	8 m
31			1013.3			1012.9			1012.3	W	5.1	WNW	6.6	W	6.0	10	10	10T	5	7	8 m
Total . .			31196.3			31169.7			31187.9		58.4		118.4		77.9	160	166	112	Heures	Nombre de cas 0 et 4,9	5 à 10
Moyenne.			1006.33			1005.47			1006.06		1,89		3,82		2,51	5,16	5,35	3,61	7h.	2	
																			13h.	1	1
																			18h.		
																			Total	3	1

Indiquer ici quelle est l'échelle adoptée pour évaluer la force du vent (de 0 à 6 ou de 0 à 9 ou de 0 à 12) ou sa vitesse (mètres par seconde ou kilomètres

Observations in professional stations before 1949 : 7h, 13 ,18h UTC

Observations in professional and synoptical stations 1949-1992

00, 3, 6, 9, 12, 15, 18, 21 UTC

Observations in professional and synoptical stations since 1993

every hour

METEO FRANCE
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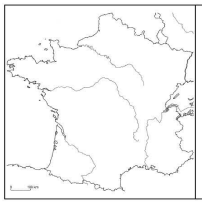
Metadata in the database BDCLIM



06088001

NICE

AEROPORT

METEO FRANCE
Toujours un temps d'avance

carte d'implantation du poste

LOCALISATION	
Département:	ALPES-MARITIMES(06)
Commune:	NICE
Lieu-dit:	AEROPORT
Lambert X:	9933 hm
Lambert Y:	18619 hm
Latitude:	43°38,93' Nord
Longitude:	7°12,54' Est
Altitude:	2 m
Date de création:	01/07/1942
Date de fermeture:	Ouvert

CARACTERISTIQUES DU POSTE					
Type:	Station professionnelle	**Réseau:**	11	**Propriétaire:**	Météo-France
Mesures effectuées:	ANEMOMETRE, BAROMETRE, CAPTEUR U, GIROUETTE, HELIOGRAPHE, OBS_HUMAIN, OBS_HUMAIN/ALTIMETRE/TELEMETRE, OBS_HUMAIN/DIFFUSO PWD11, OBS_HUMAIN/DIFFUSO/TRANSMISSO, OBS_MER_HUMAIN, OBS_NUAGE_HUMAIN, PLUVIOMETRE, PYRANOMETRE, THERMOMETRE A +10 CM, THERMOMETRE A -10 CM, THERMOMETRE A -100 CM, THERMOMETRE A -20 CM, THERMOMETRE A +50 CM, THERMOMETRE A -50 CM, THERMOMETRE SOUS ABRI				

EMPLACEMENTS SUCCESSIFS		
Lieu_dit (lambx,lamby,altitude)	**du**	**au**
CALIFORNIE - EST DE L'AERODROME (9938 hm,18639 hm,3 m)	01/07/1942	27/11/1942
VILLA MIREILLE (9925 hm,18638 hm,3 m)	30/11/1942	04/01/1944
VILLA MASSENA (9978 hm,18660 hm,2 m)	05/01/1944	10/09/1944
AERODROME (9938 htm,18639 htm,2 m)	11/09/1944	04/11/1944
FERBER - PISTE EST (9938 htm,18639 htm,2 m)	05/11/1944	04/04/1946
VILLA FLORIS AERODROME (9926 htm,18619 htm,4 m)	05/04/1946	25/04/1957
AERODROME (9927 htm,18626 htm,4 m)	26/04/1957	30/11/2006
AERODROME (9927 htm,18626 htm,4 m)	01/12/2006	10/06/2008
AERODROME (9933 htm,18619 htm,2 m)	11/06/2008	

ADRESSE DU POSTE			
N° et rue:	AEROPORT DE NICE COTE D AZUR		
Code postal:	06056	**Commune:**	NICE

CORRESPONDANT LOCAL

Page 1 Meteo-France: DClim/BD-Climsol.

Station code rule :

new station code when

New city

Relocation distance > 3km or vertical distance > 50m

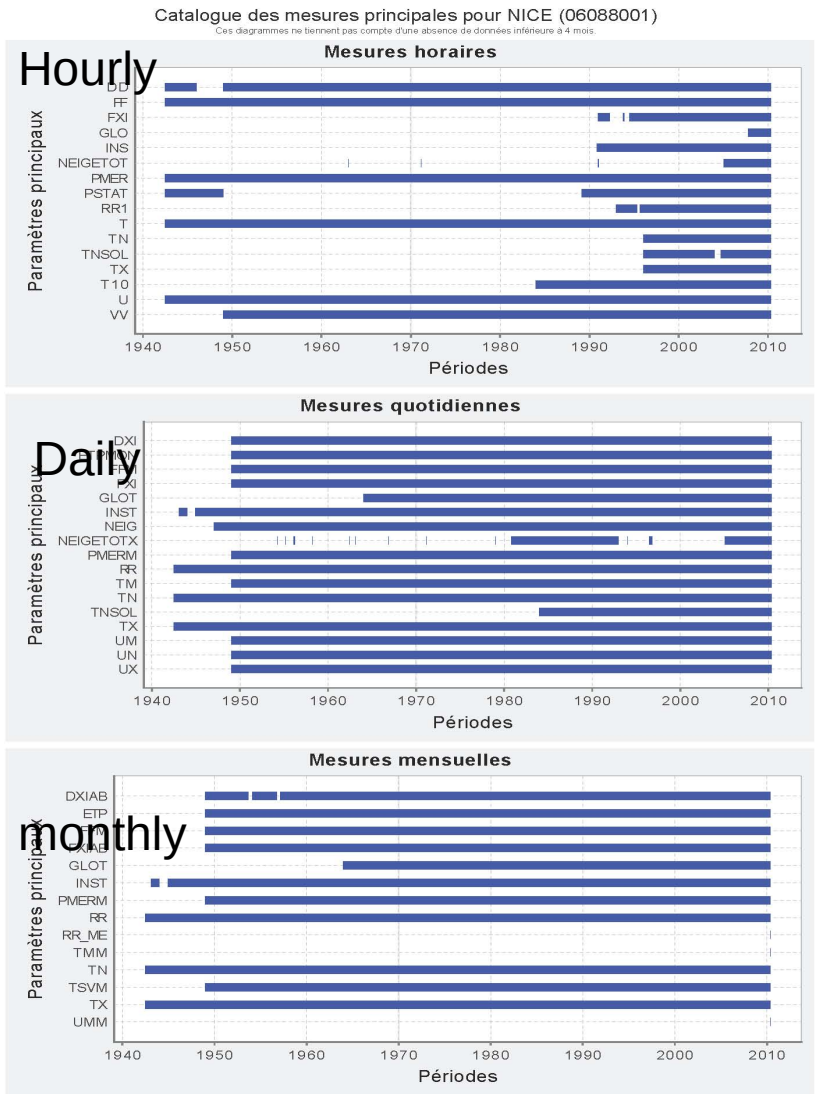
(1 km et 30 m in the mountains)

Nice Airport example :6 measurement sites between 1942/07 and 1946/05

Difficulties to fill the MEDARE Web portal station history item

METEO FRANCE
Toujours un temps d'avance

Inventory of Data in the database BDCLIM



NICE AIRPORT opening in 1942

Subdaily since the beginning :
Pressure, Temperature and Humidity

Hours of observation before 1949 :
7,13, 18 UTC

Hours 1949-1997 : 6, 12, 18 UTC

Every hour since 1997

METEO FRANCE
Toujours un temps d'avance

Montpellier long-term series

- MAUGUIO Montpellier Airport 3415401
  - 1949- opened
  - Synoptical and professional station
  - Windspeed reiable since 1971
  - Subdaily data from 1949 P, T, U
  - Daily data tn tx RR and Inst from 1949

- Montpellier ENSAM 1921-2008 34172001

1921-2008 : Domaine du Belair 1921-1974

ENSAM 1975-2008

Daily data tn tx and rr from 1924 to 1942

Marignane long_term series

- MARIGNANE Marseille airport 13054001
- 1920- opened
- 5 relocations between 1920 to 1945
- Hourly and daily data from 1921/01
- Observation hours : 7, 13, 18 h before 1949 and 6, 12, 18 1949-1992, every hour since 1993

- Gap 1943/07 to 1945/09

- Reliable winspeed since 1971/03

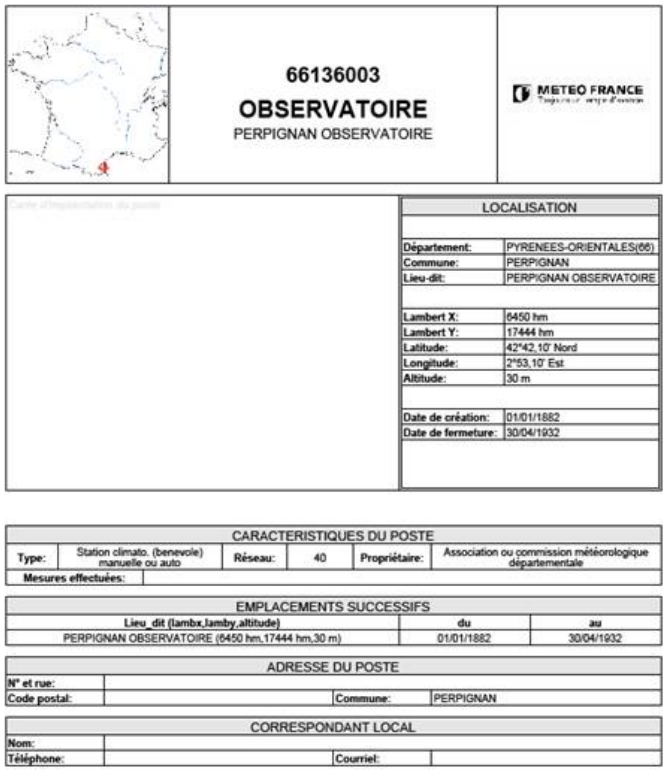
TOULOUSE long-term series

- BLAGNAC Toulouse airport 31069001 1947- opened
- Subdaily and daily data from 1947, change of hours of observations 1949, hourly data from 1993
- Reliable windpeed from 1969

- Toulouse Francazal military aerodrom 31157001 1922/06- opened
- Subdaily data P and T : 7h,3, 18 before 1949 and 6, 12, 18 after
- Gap 1943/06-1944/10

- Toulouse observatoire 31555016 1844-1984
- Subdaily data P and T 1900-1925
- Daily data tn, tx and rr 1878-1938

Perpignan long term series



66136003
OBSERVATOIRE
PERPIGNAN OBSERVATOIRE

METEO FRANCE

LOCALISATION	
Département:	PYRENEES-ORIENTALES(66)
Commune:	PERPIGNAN
Lieu-dit:	PERPIGNAN OBSERVATOIRE
Lambert X:	6450 hm
Lambert Y:	17444 hm
Latitude:	42°42,10' Nord
Longitude:	2°53,10' Est
Altitude:	30 m
Date de création:	01/01/1882
Date de fermeture:	30/04/1932

CARACTERISTIQUES DU POSTE					
Type:	Station climato. (benevole) manuelle ou auto	Réseau:	40	Propriétaire:	Association ou commission météorologique départementale
Mesures effectuées:					

EMPLACEMENTS SUCCESSIFS		
Lieu_dit (lambx,lamby,altitude)	du	au
PERPIGNAN OBSERVATOIRE (6450 hm,17444 hm,30 m)	01/01/1882	30/04/1932

ADRESSE DU POSTE			
N° et rue:			
Code postal:		Commune:	PERPIGNAN

CORRESPONDANT LOCAL			
Nom:			
Téléphone:		Courriel:	

Page 1 Meteo-France: DClim/BD-Climsol

Perpignan observatoire 66136003
opening in 1882 closing in 1932/04

Daily Rainfall and temperature 1882 -1932/04

Subdaily Pressure and temperature
1901-1914 6, 12, 18h from BCM Annals
1920-1924 12h from departmental publication

Perpignan aéroport 66136001
opening in 1924
Subdaily pressure and temperature since 1949
Daily data since 1924

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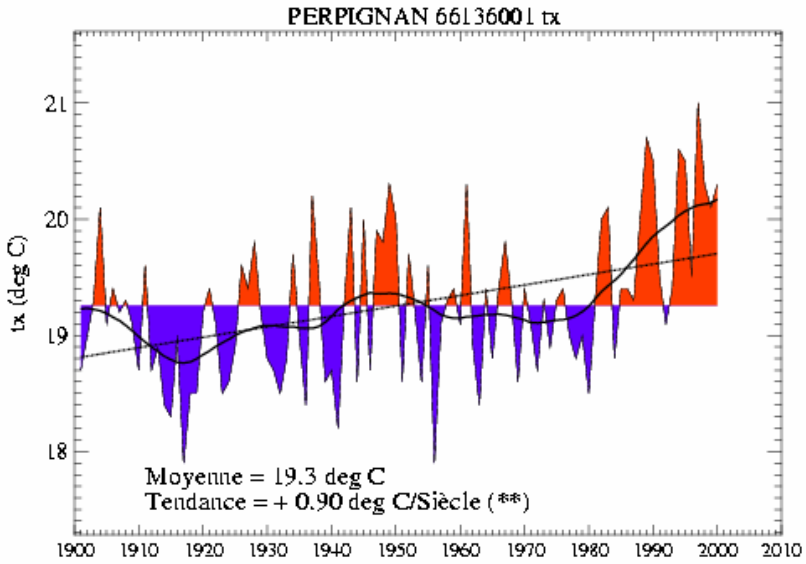
Monthly homogenized Temperature series

- 1901-2000 Period :

70 homogenized series

  - Montpellier
  - Marignane
  - Toulouse
  - Perpignan



- 1959 to today

homogenization in process for 200 french stations (regional scale)

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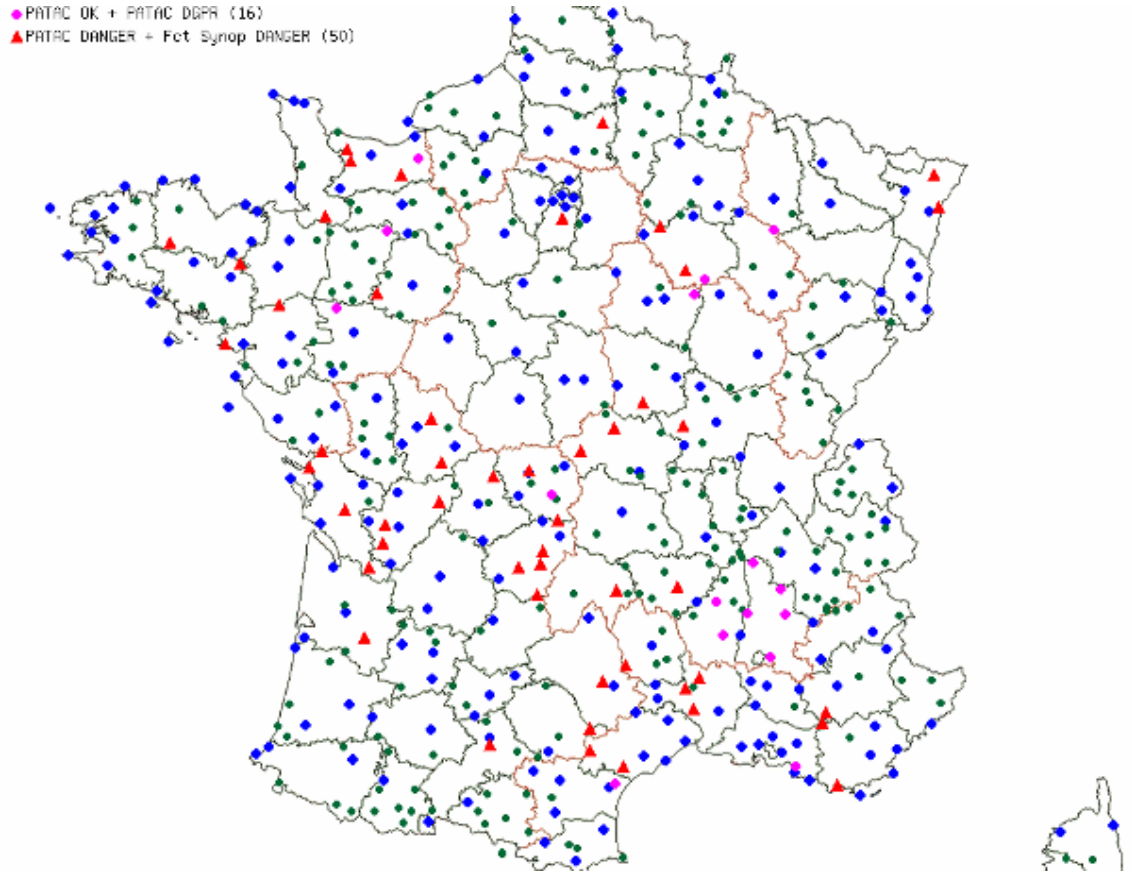
Toujours un temps d'avance

Long-term series in danger



Daily Temperature long-term series (> 50 ans)

494 stations, half of them is in danger