



GOBIERNO  
DE ESPAÑA

MINISTERIO  
DE AGRICULTURA, ALIMENTACIÓN  
Y MEDIO AMBIENTE



# *Climate services for monitoring the recent evolution of climate in Murcia Region*

AEMET Regional Office Murcia

5<sup>th</sup> June 2013

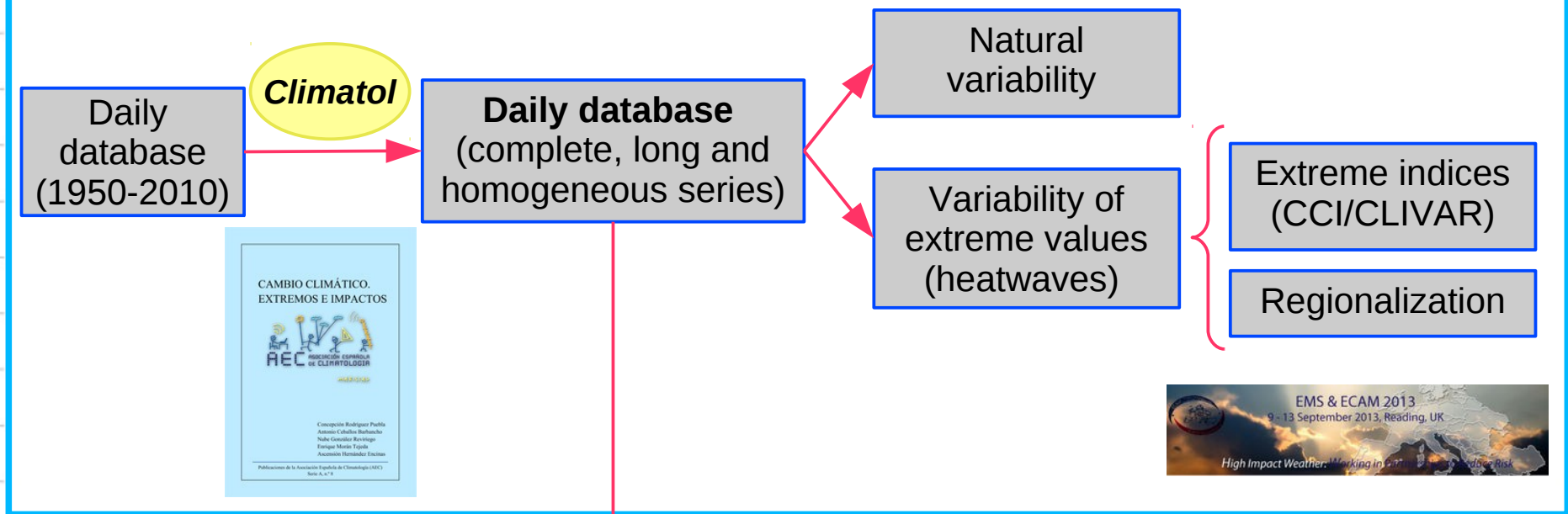
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# INDEX

- Previous work
- Motivation
- General procedure
- Graphic products
- More future products

# PREVIOUS WORK

*Climatological study of heatwaves (July 2011- February 2013)*



Monitoring the recent evolution of climate

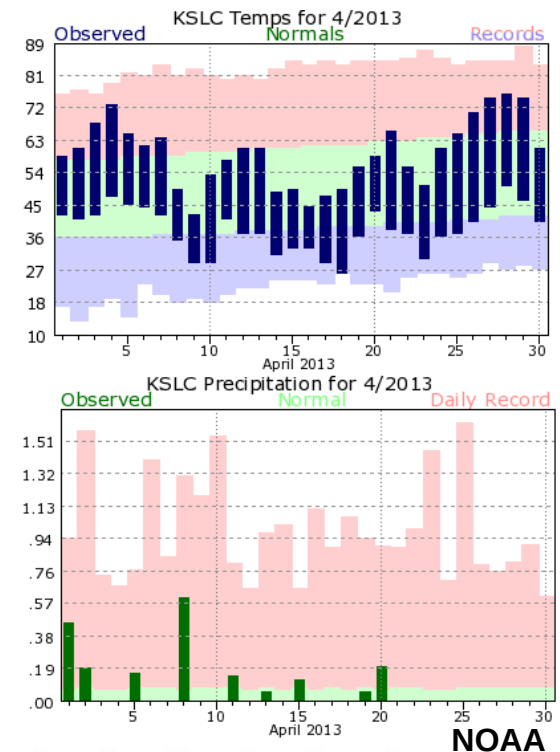
# MOTIVATION

“According to the **Climate Watch System** from World Meteorological Organization (**WMO**), a “**Climate Watch**”, based on observations of current and/or future **climate anomalies**, can serve as a mechanism to warn the user community that a significant climate anomaly exists or might develop. In this respect, **climate observations** are necessary in real and historical time in order to monitor and predict effectively climate extremes.

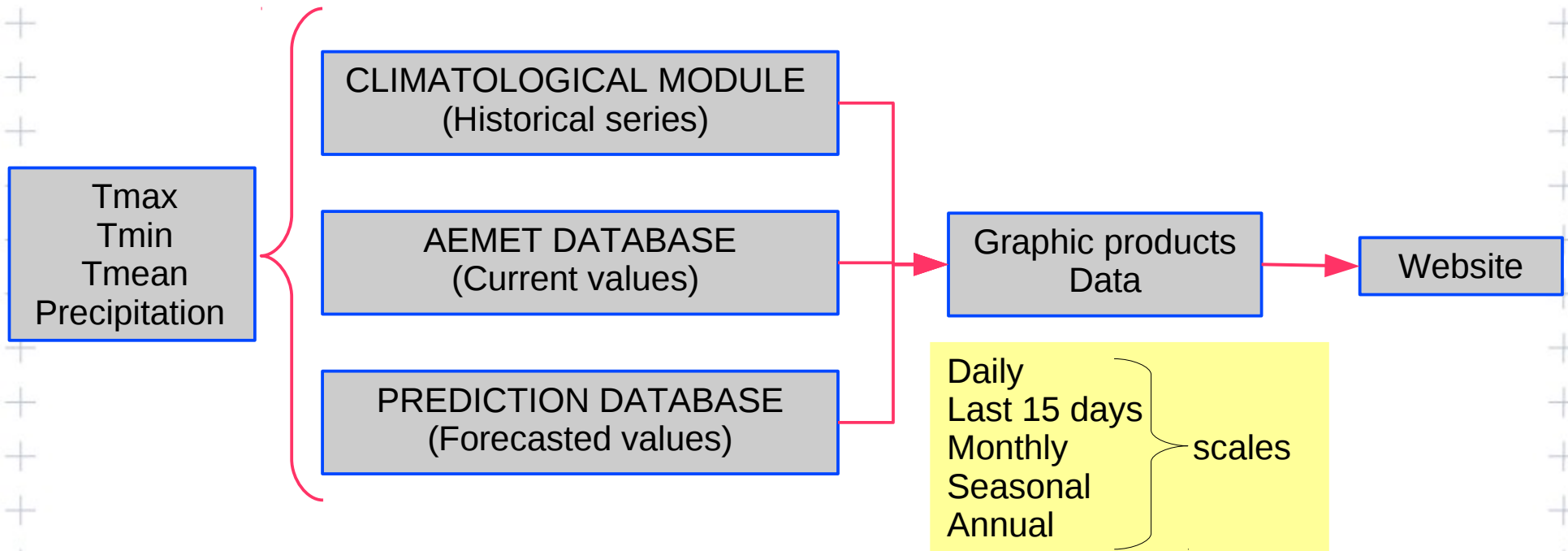
*In general, as part of a Climate Watch system, it is necessary monitoring and assessing the state of the climate, evaluate available climate forecasts, and, when conditions warrant, issue formal climate watches to alert end users (Climate Watch System. Early Warning against Climate Anomalies and Extremes, WMO 2006)”.*

Regarding to this Climate Watch system, we have developed some graphic products, which show the evolution of climate in real time.

- Attention to media
- Other climate services
- User community
- .....



# GENERAL PROCEDURE

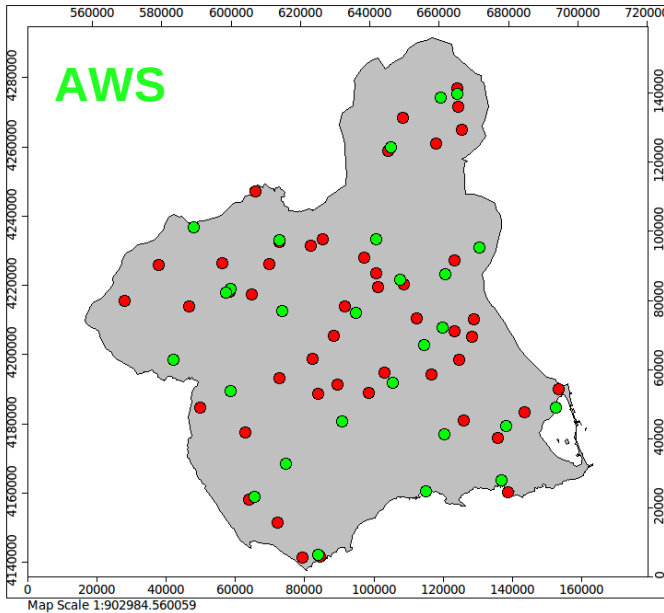


# Climatological module

Daily homogeneous database (83 stations)

25 Automated Weather Stations (AWS)

Tmax  
Tmin  
Tmean  
Precipitation



For each station

Normal values 1981-2010

Regional level

IDW (RSAGA)

Regional values

Normal values 1981-2010

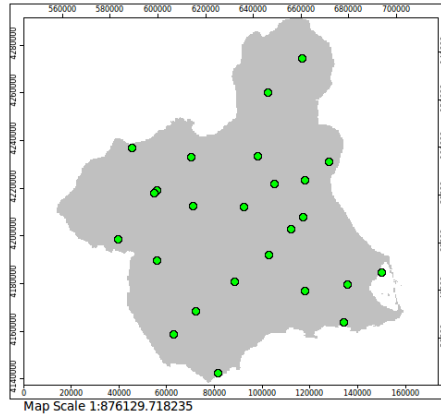
Historical series

# RSAGA: module IDW (Inverse Distance Weigthed)

Temperature data

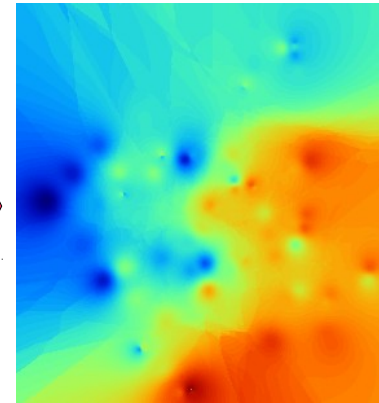
longitud	latitud	1	2	3
613243	4151304	9.31	11.92	13.57
620316	4141107	11.17	13.4	14.96
625377	4141490	12.1	14.42	16.08
625047	4142163	13.38	15.05	16.23
656057	4160445	11.36	13.09	14.55
656057	4160445	12.1	13.82	15.26
677733	4163657	11.94	13.63	15.01
679576	4160119	11.34	13.18	14.64
661309	4176795	9.68	11.55	13.75
661309	4176796	11.15	12.85	14.34
666910	4180792	9.2	11.27	12.95
676883	4175850	10.68	12.8	14.36
679235	4179232	10	11.98	13.56
679235	4179232	11.13	12.85	14.23
684581	4183297	10.17	12.09	13.64
693537	4184490	9.43	11.27	12.89
694243	4189842	11.2	12.82	14.14
588957	4236733	4.89	7.65	9.99
588957	4236733	6.95	9.18	11.06
606854	4247062	7.23	9.43	12.21
578954	4225840	4.08	6.65	8.68
597394	4226349	8.06	10.57	12.57
587747	4213723	6.69	9	10.72
599628	4218792	7.4	10.38	12.29

Convert table to points

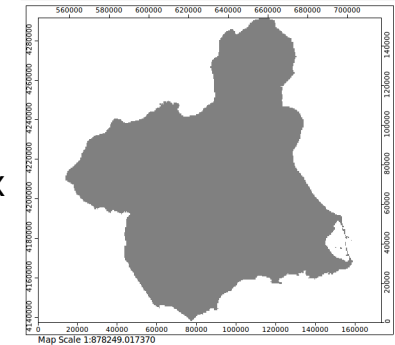


IDW

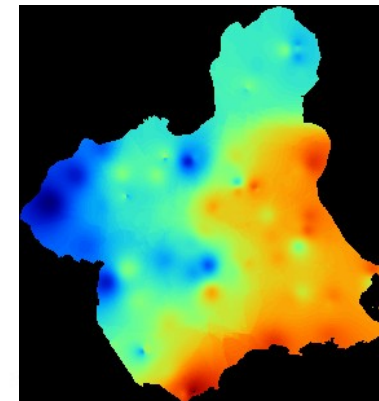
Radio = 100 km  
Maximum num. of points = 10



Daily temperature grid



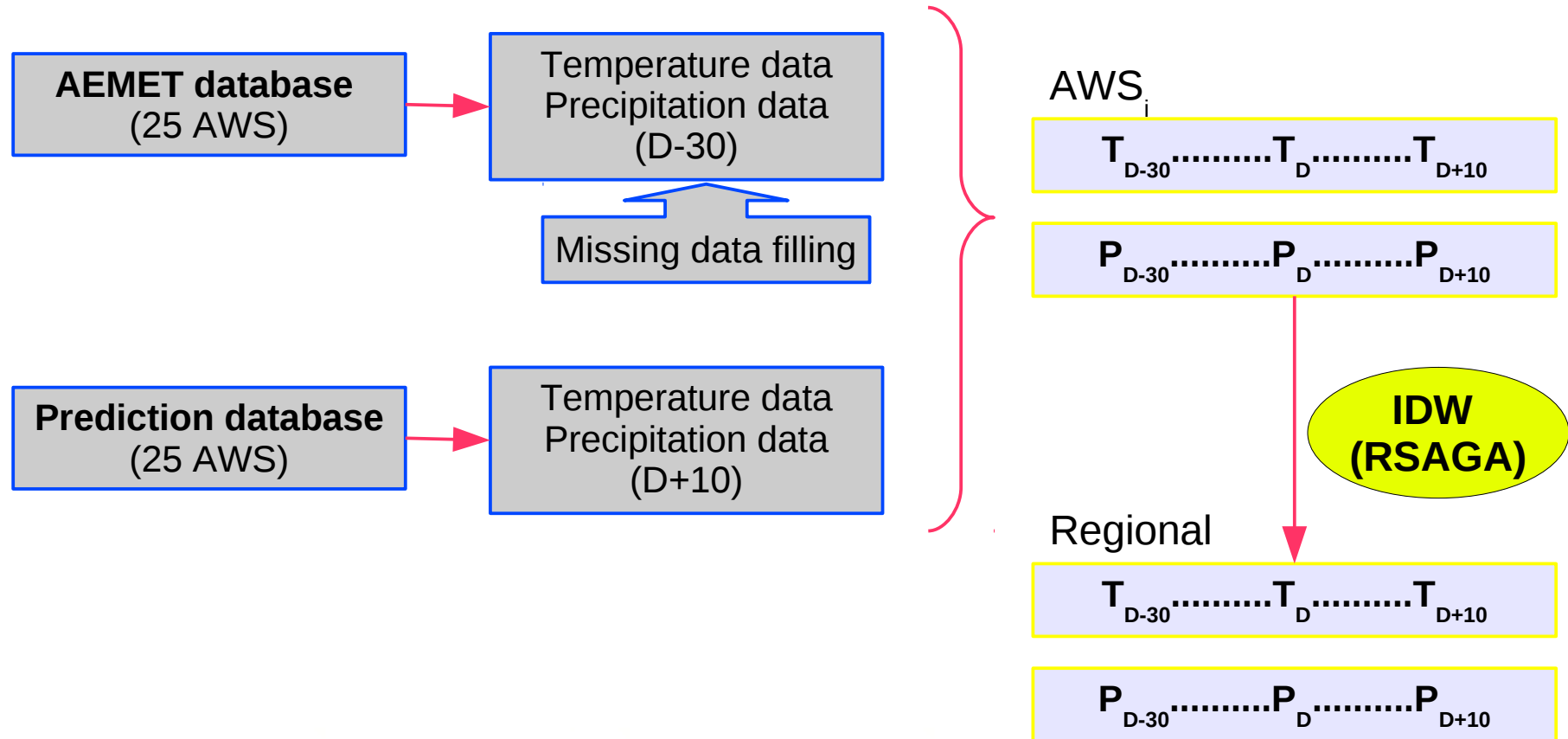
Regional grid



Daily regional temperature

RSAGA

# AEMET and Prediction databases





# GRAPHIC PRODUCTS

**Daily scale**  
For each station  
Regional

$T_{max_{D-30}} \dots T_{max_D} \dots T_{max_{D+10}}$

$T_{mean_{D-30}} \dots T_{mean_D} \dots T_{mean_{D+10}}$

$T_{min_{D-30}} \dots T_{min_D} \dots T_{min_{D+10}}$

$P_{D-30} \dots P_D \dots P_{D+10}$

**Monthly scale**  
Regional

$T_{max_{M-13}} \dots T_{max_{M-1}}$

$T_{mean_{M-13}} \dots T_{mean_{M-1}}$

$T_{min_{M-13}} \dots T_{min_{M-1}}$

$P_{M-13} \dots P_{M-1}$

$T_{max_{1950}} \dots T_{max_{Y-1}}$

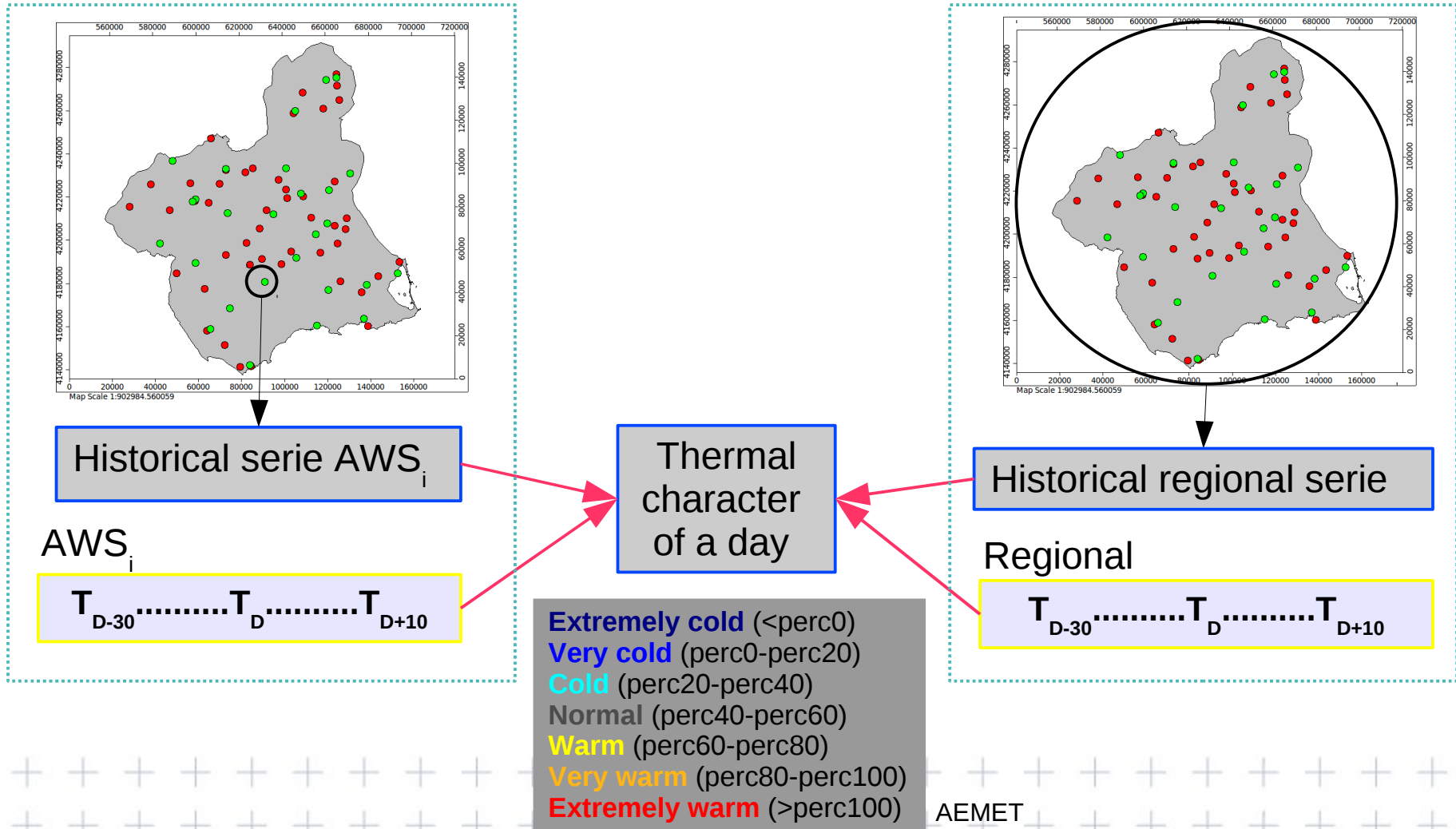
$T_{mean_{1950}} \dots T_{mean_{Y-1}}$

$T_{min_{1950}} \dots T_{min_{Y-1}}$

$P_{1950} \dots P_{Y-1}$

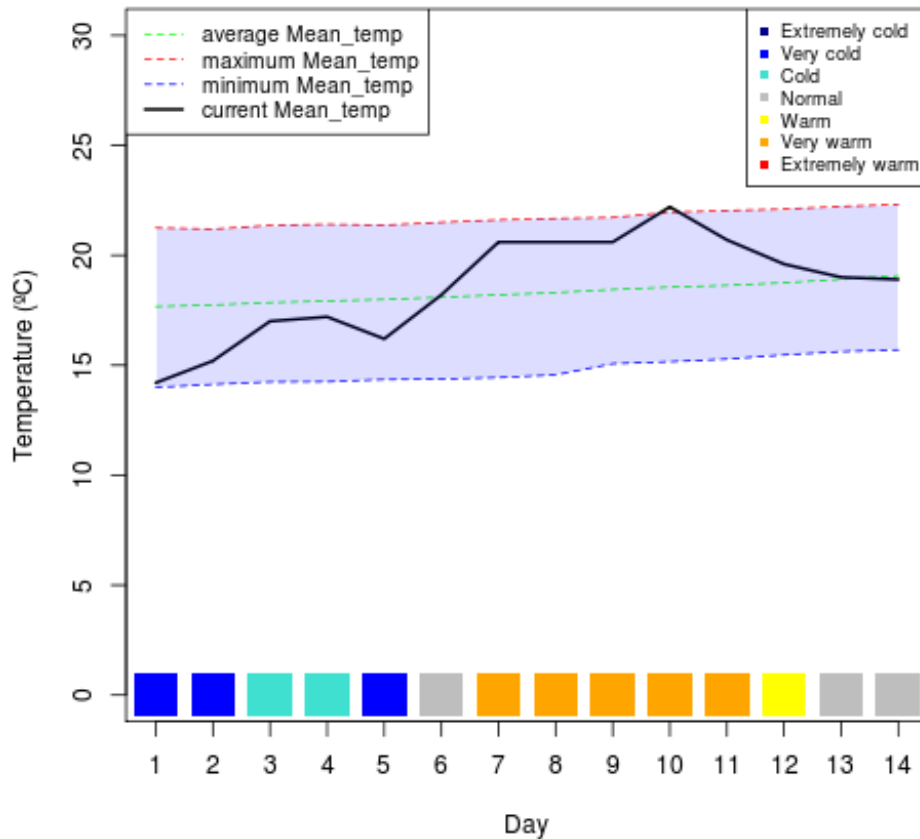
**Annual scale**  
Regional

# GRAPHIC PRODUCTS (Example Temp)

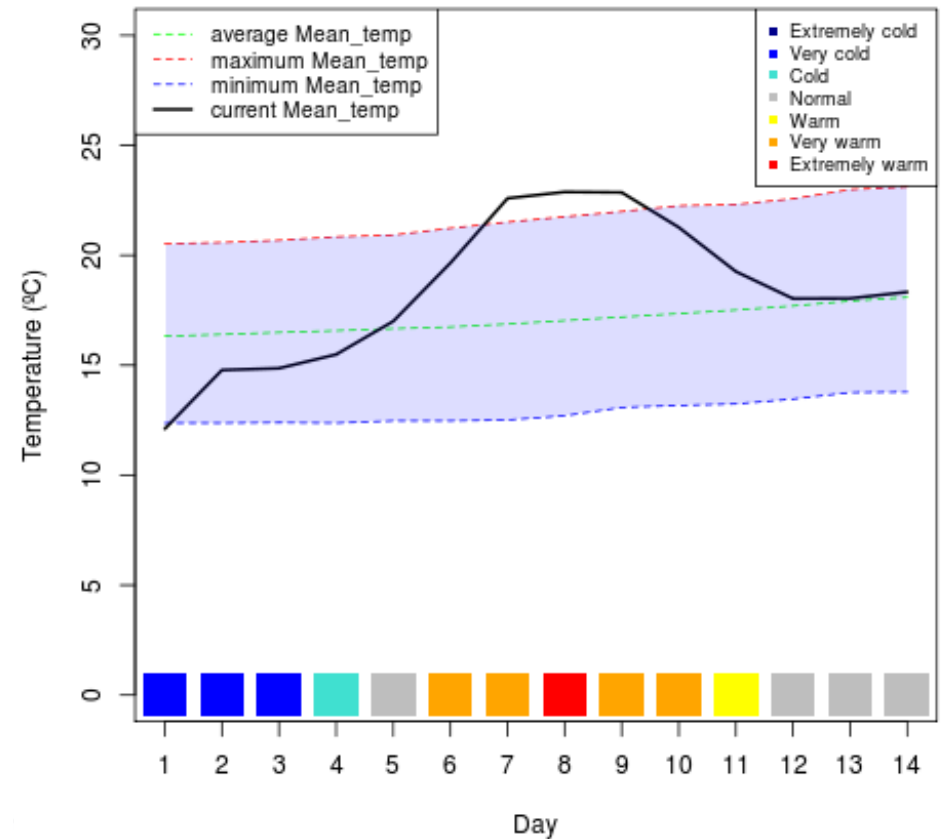


# Last 15 days (Example Tmean)

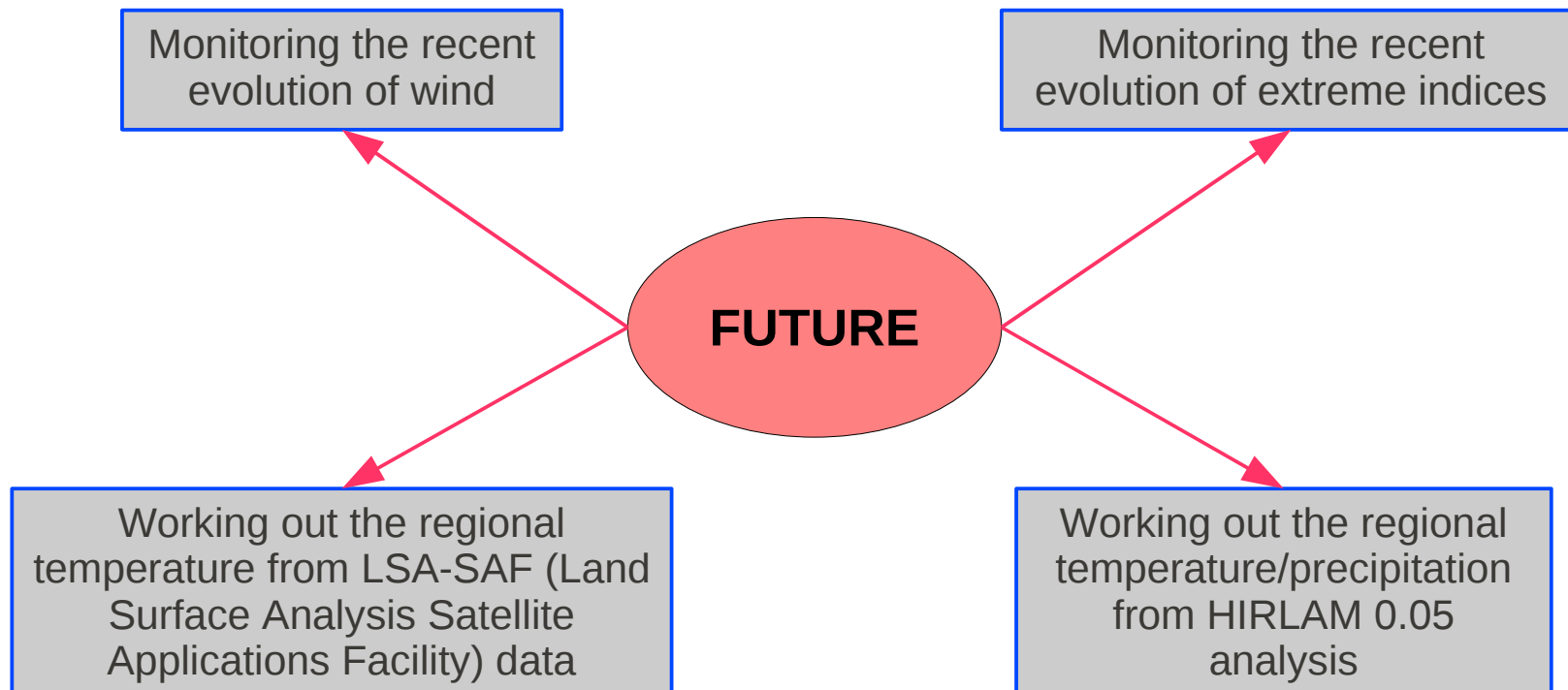
Mean\_temp May\_2013 7012C



Regional Mean\_temp May\_2013



# MORE FUTURE PRODUCTS





***Thanks for your  
attention!***