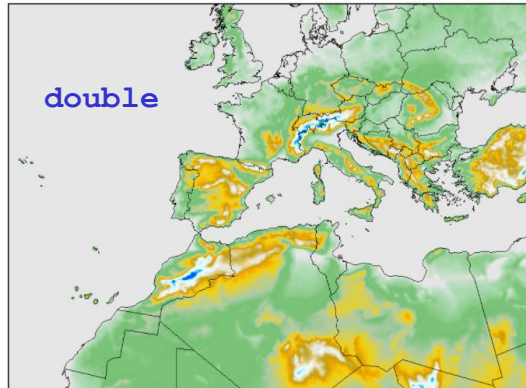
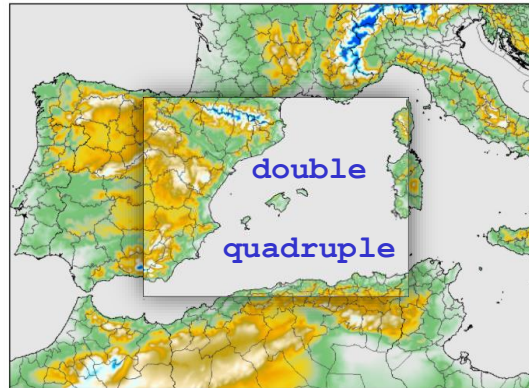


## TRAM / MeteoUIB

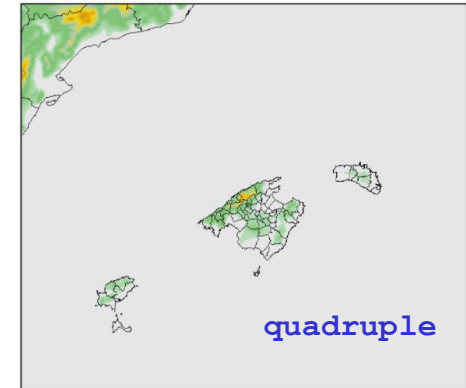
**MR (17 km)**



**HR (6 km)**

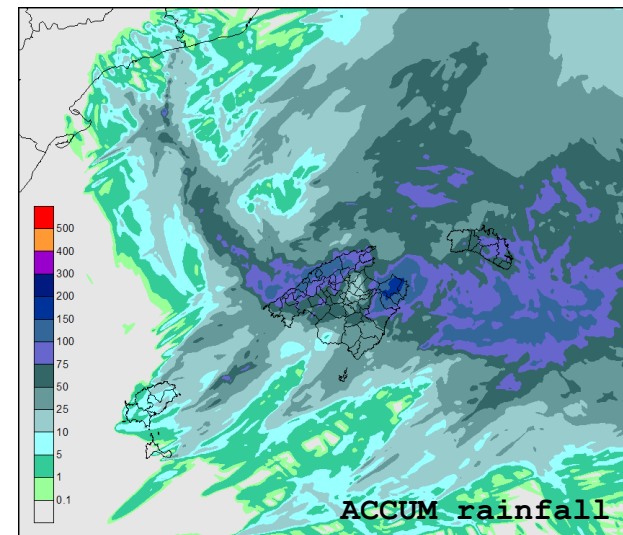
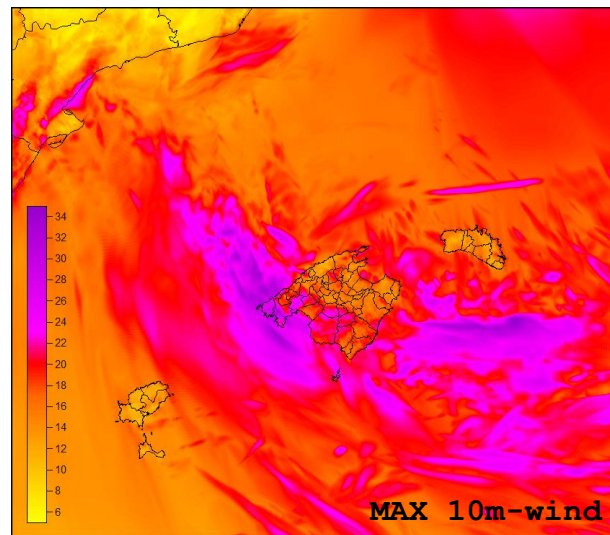
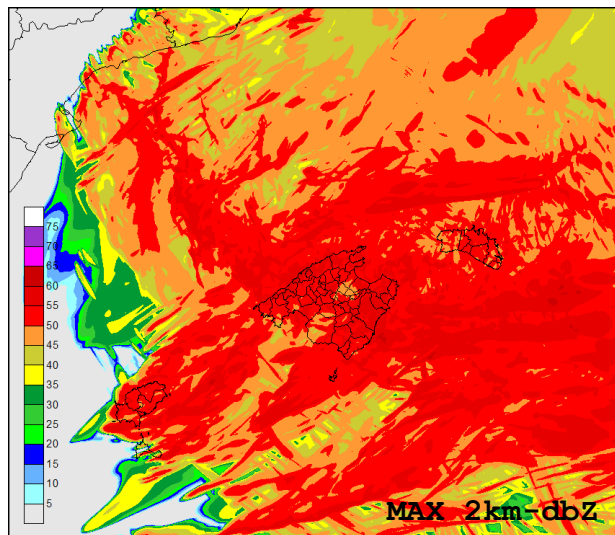


**SR (2 km)**

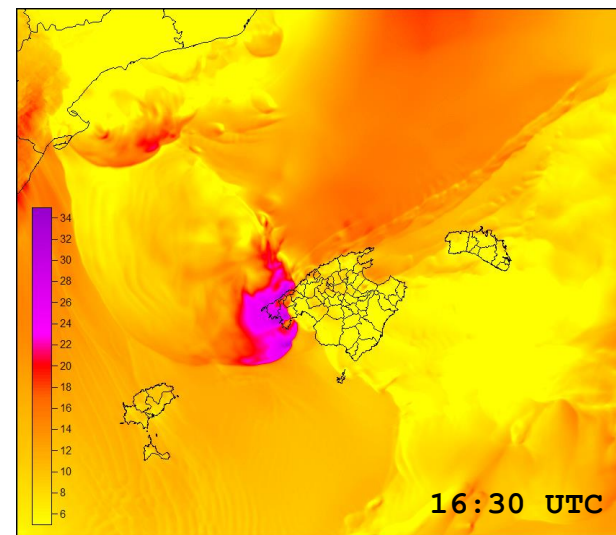
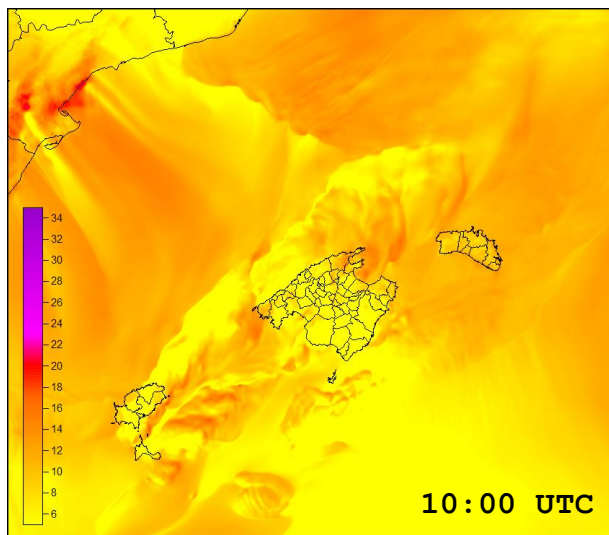


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# Work in Progress: TEMPESTES SEVERES a les Illes Balears

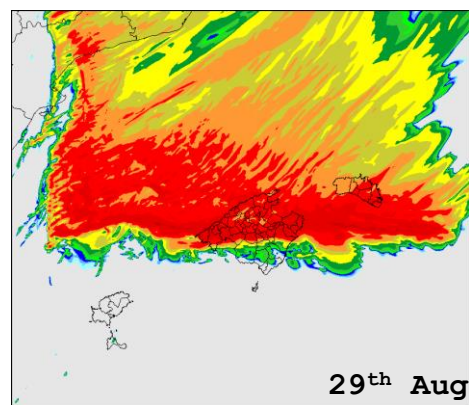


27<sup>th</sup> August 2023

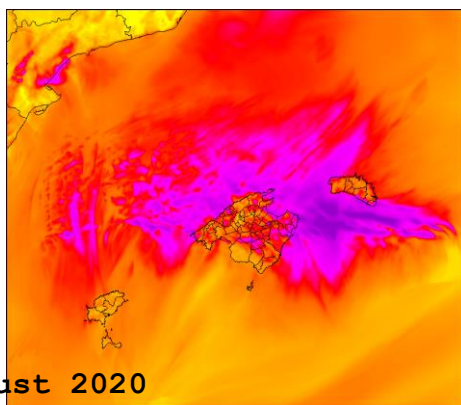




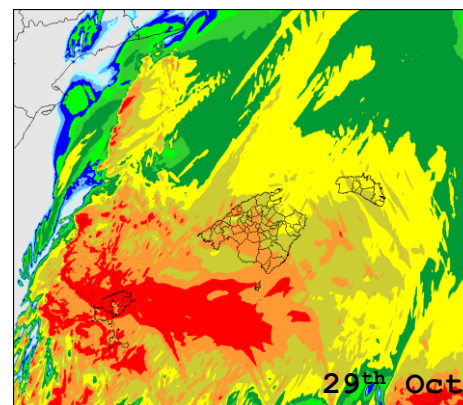
# Work in Progress: TEMPESTES SEVERES a les Illes Balears



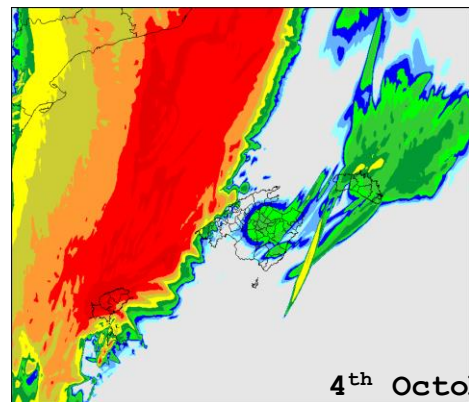
29<sup>th</sup> August 2020



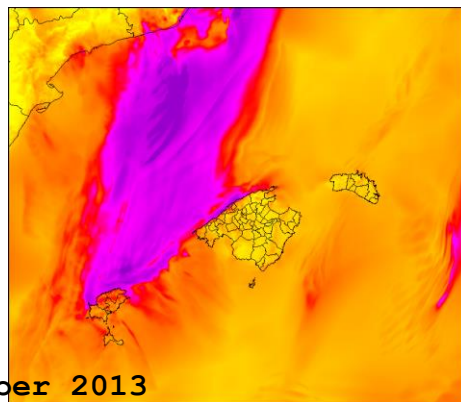
29<sup>th</sup> October 2013



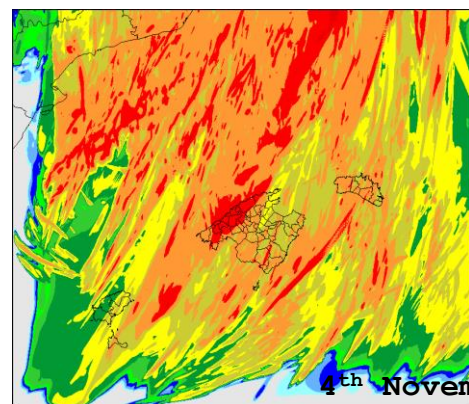
4<sup>th</sup> October 2013



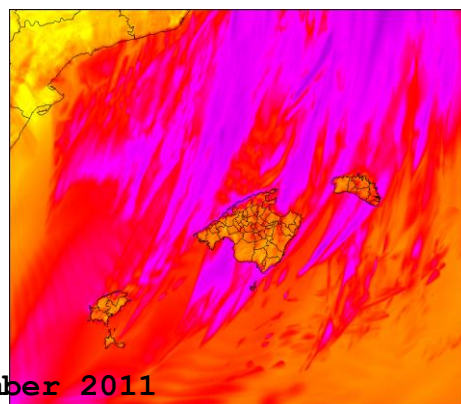
27<sup>th</sup> August 2019



4<sup>th</sup> November 2011



27<sup>th</sup> October 2018



dbZ



m/s



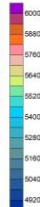
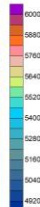
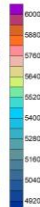
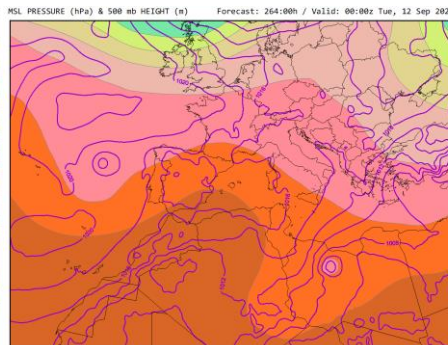
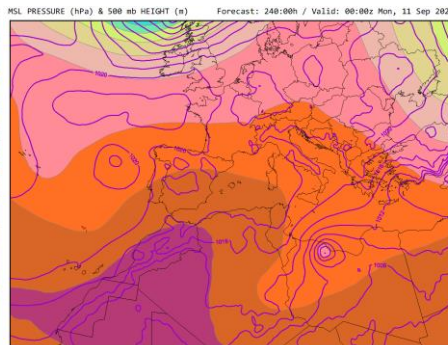
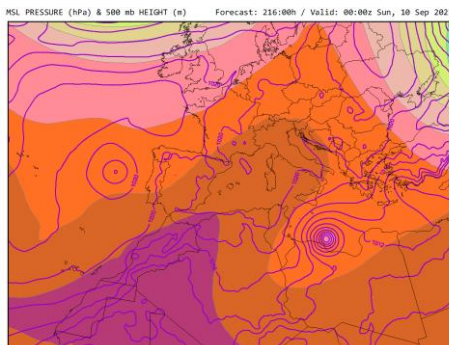
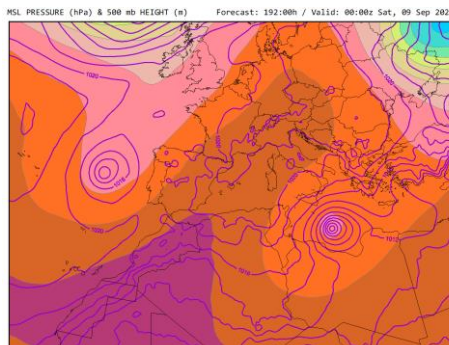
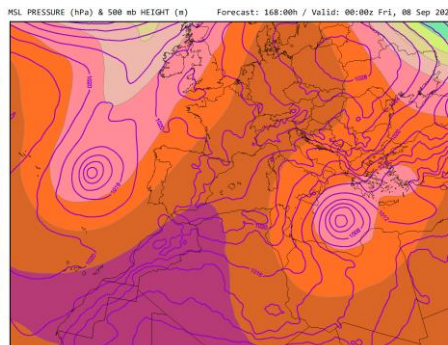
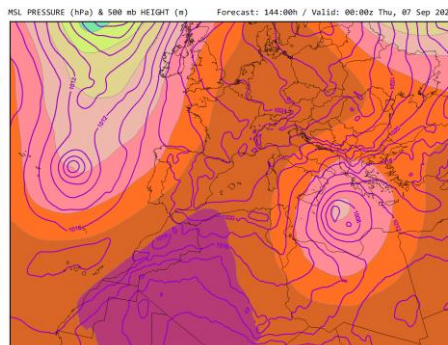
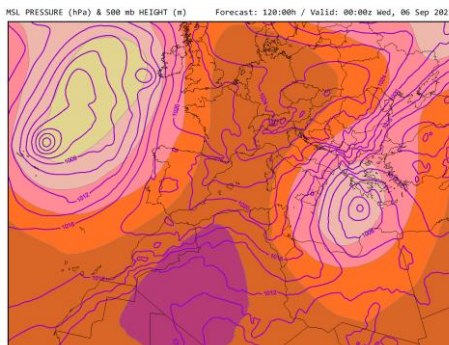
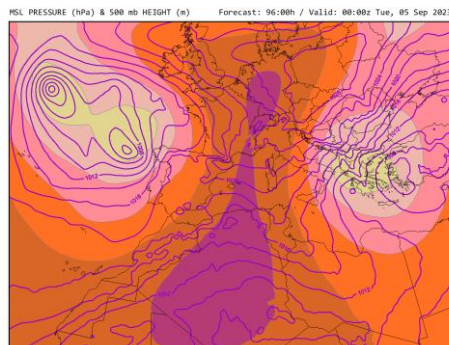
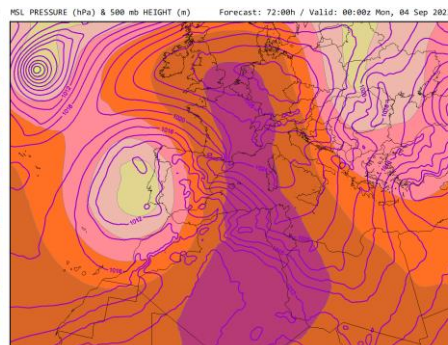
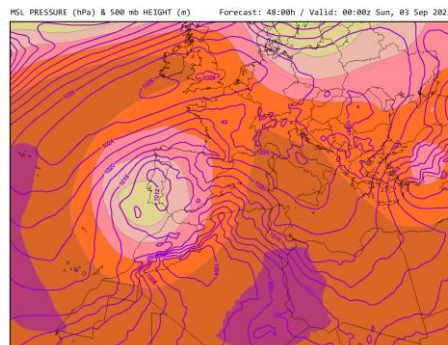
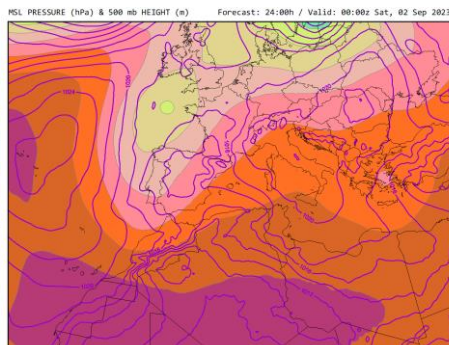
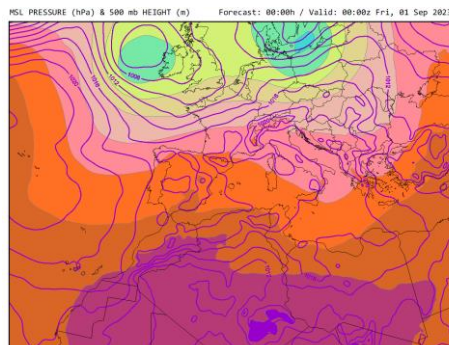
*DANA & storm-medicane DANIEL*  
*(September 2023)*

*4 TRAM-ERA5 simulated periods*



1. FULL EPISODE (MR resol.)  
(01 Sep 00UTC – 12 Sep 00UTC)

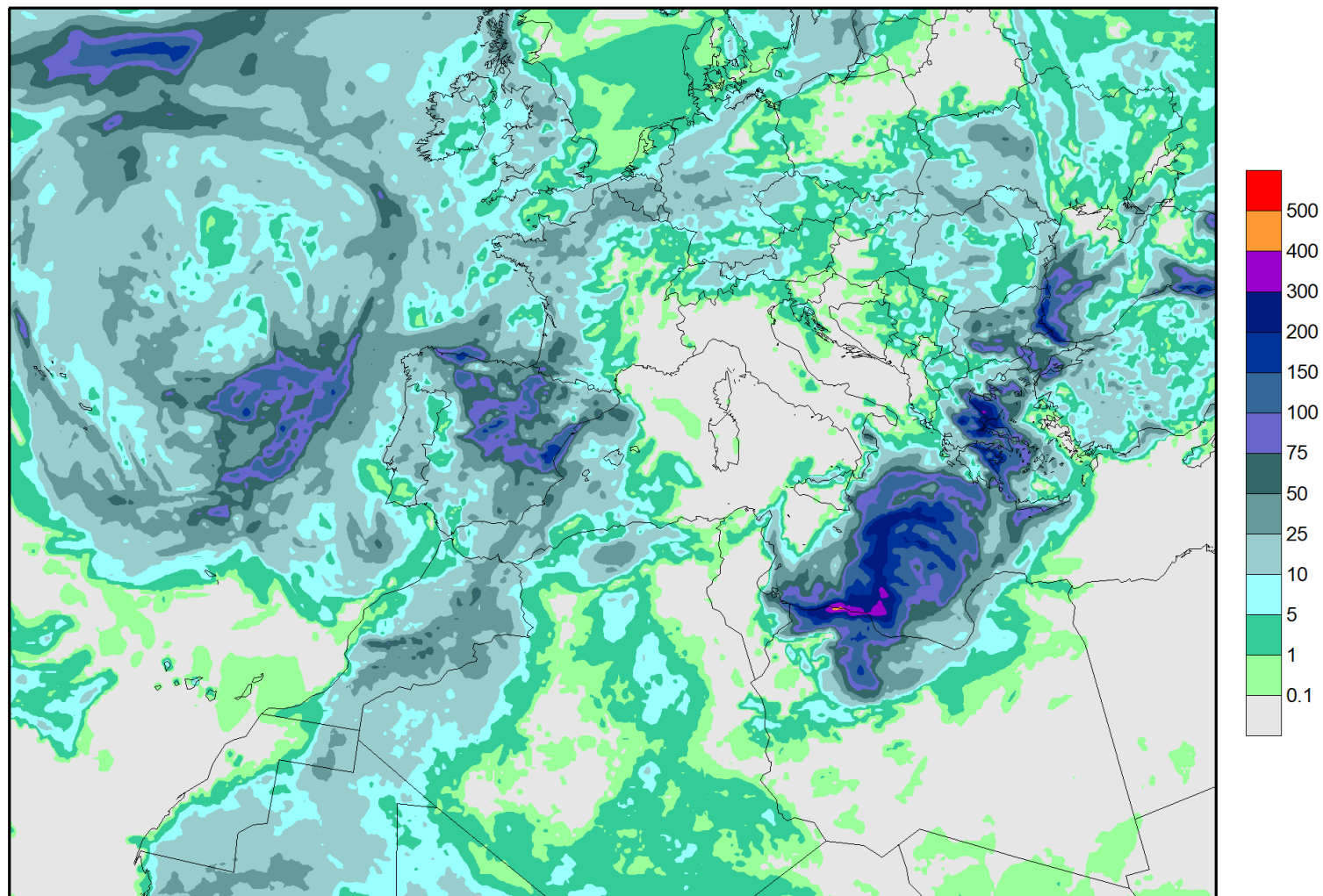
*W-pattern? – Stationarity? – Mediane?*





TOTAL ACCUM PRECIP (mm)

Forecast: 288:00h / Valid: 00:00z Wed, 13 Sep 2023

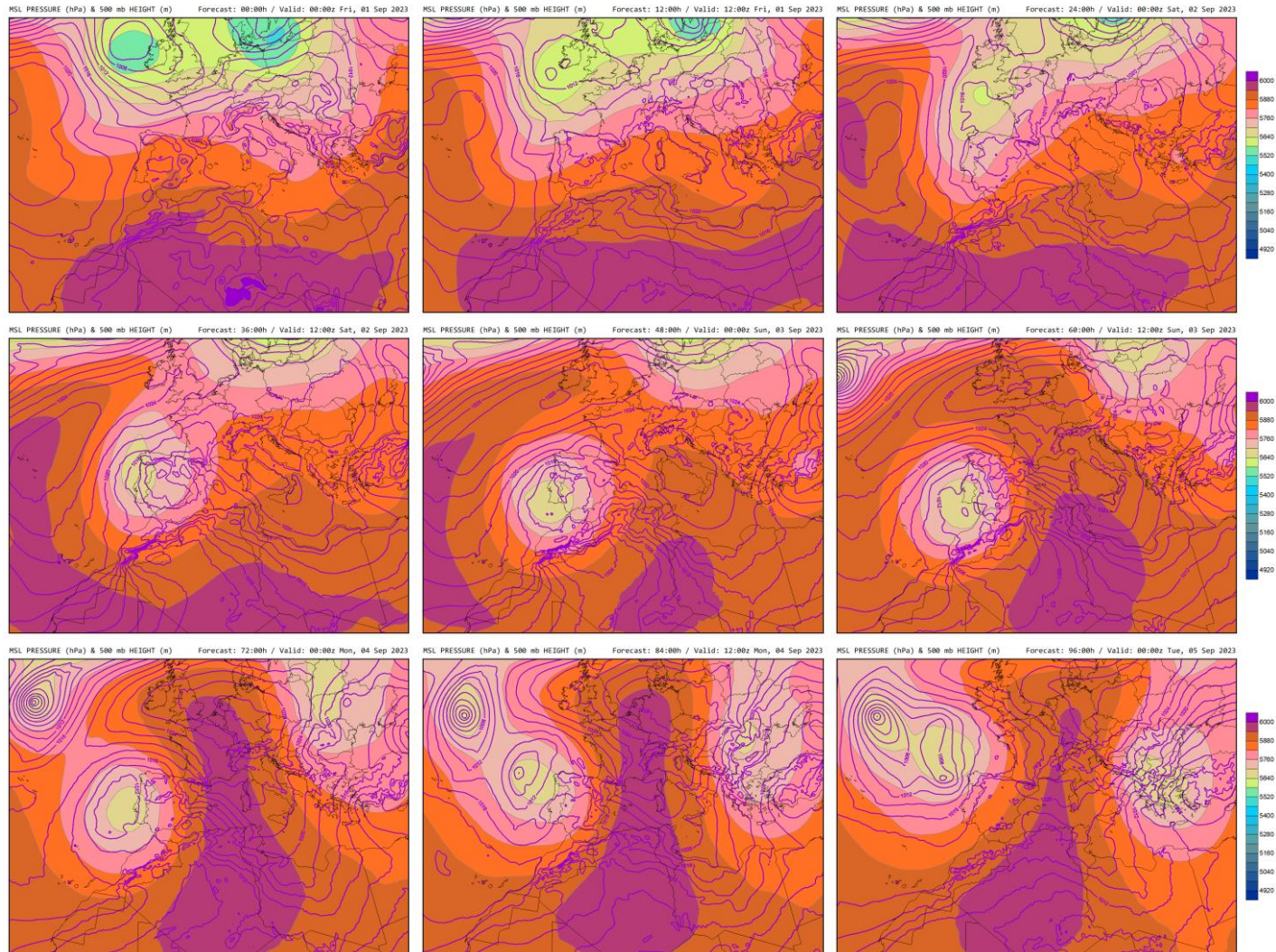




2. SPANISH PHASE (MR-double resol.)  
(01 Sep 00UTC – 05 Sep 00UTC)

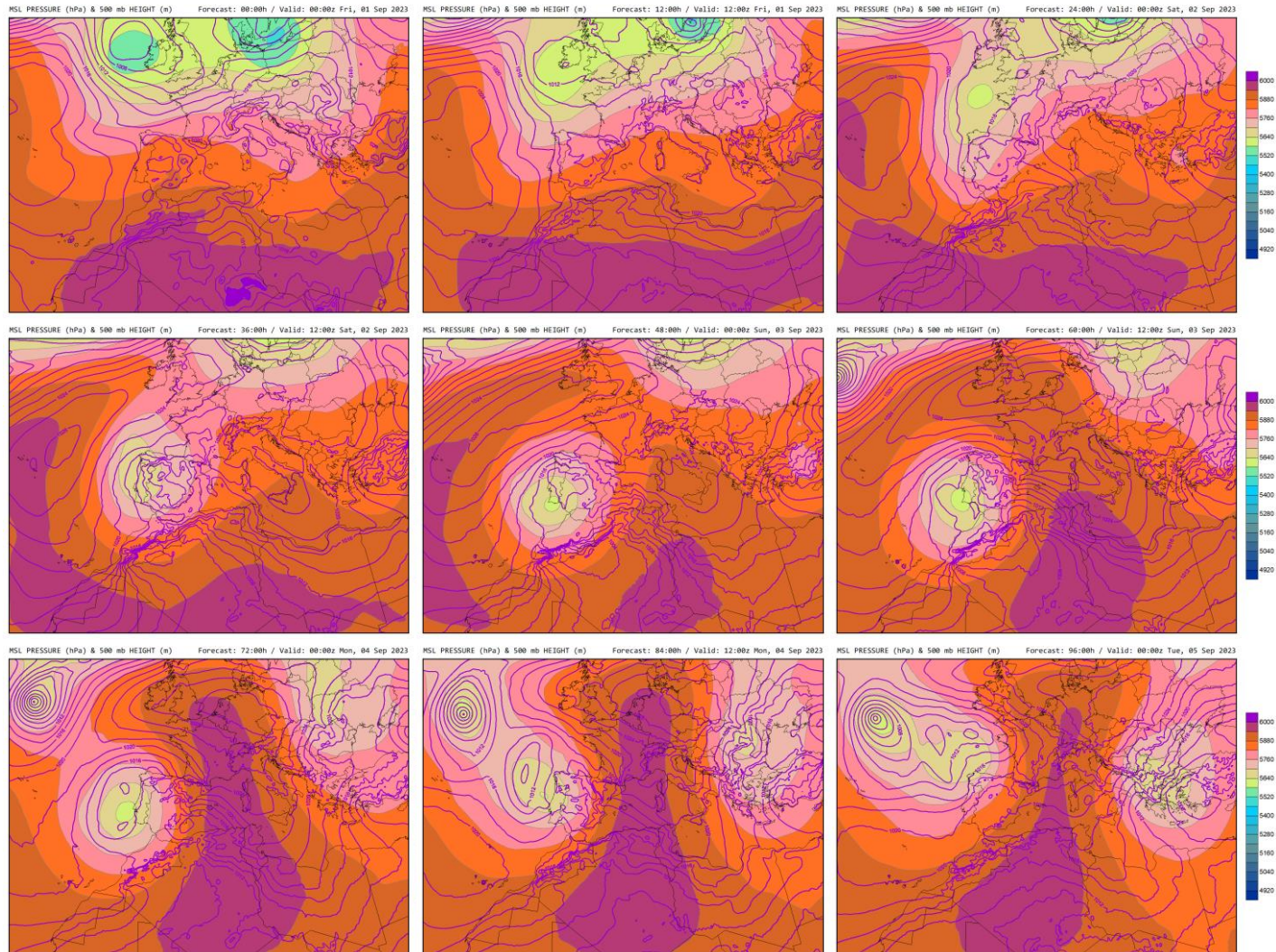
DANA? – QPF? – Flood potential?

# CONTROL



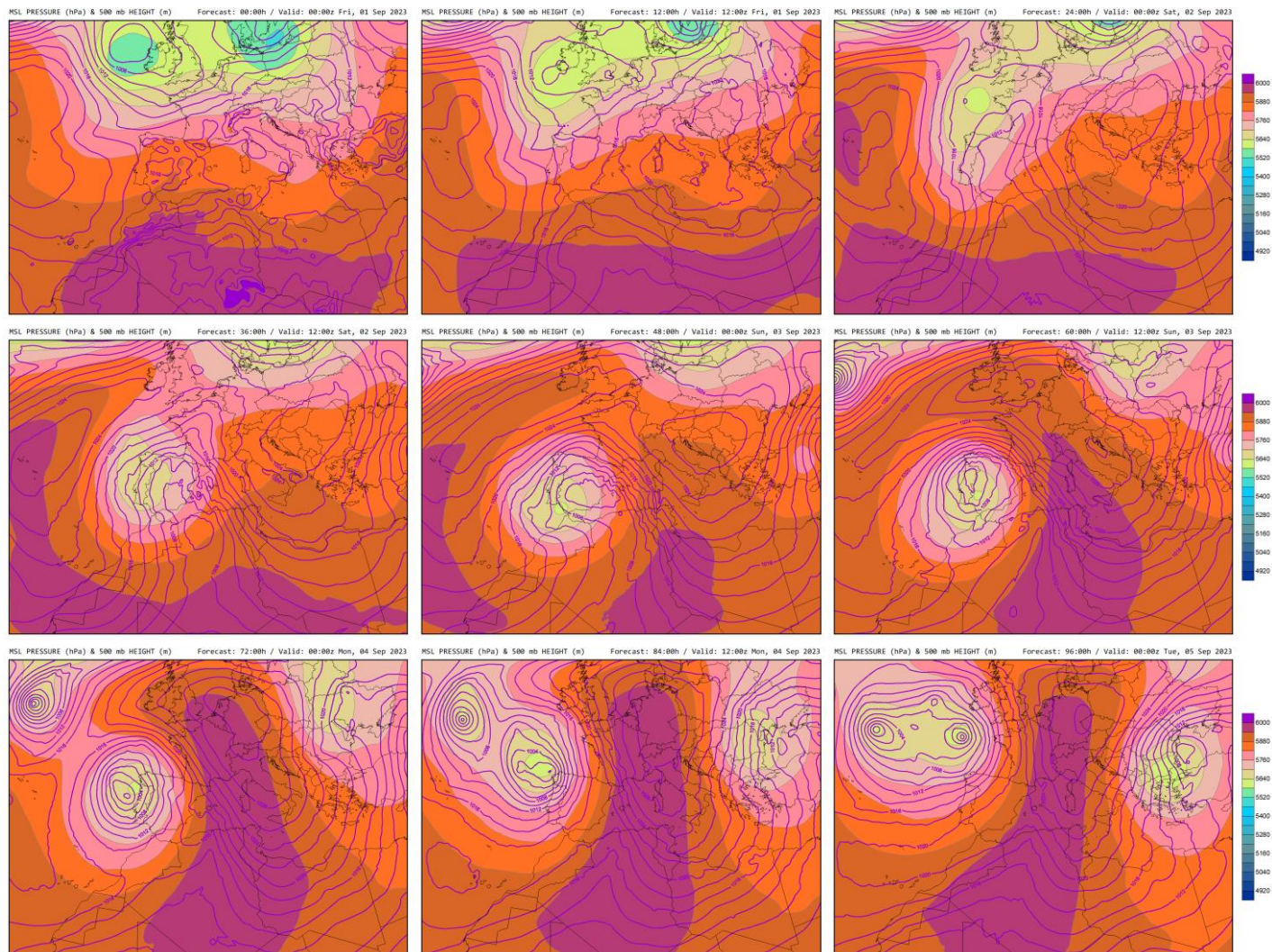


SST -3°C





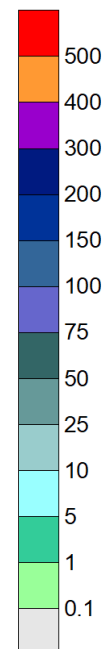
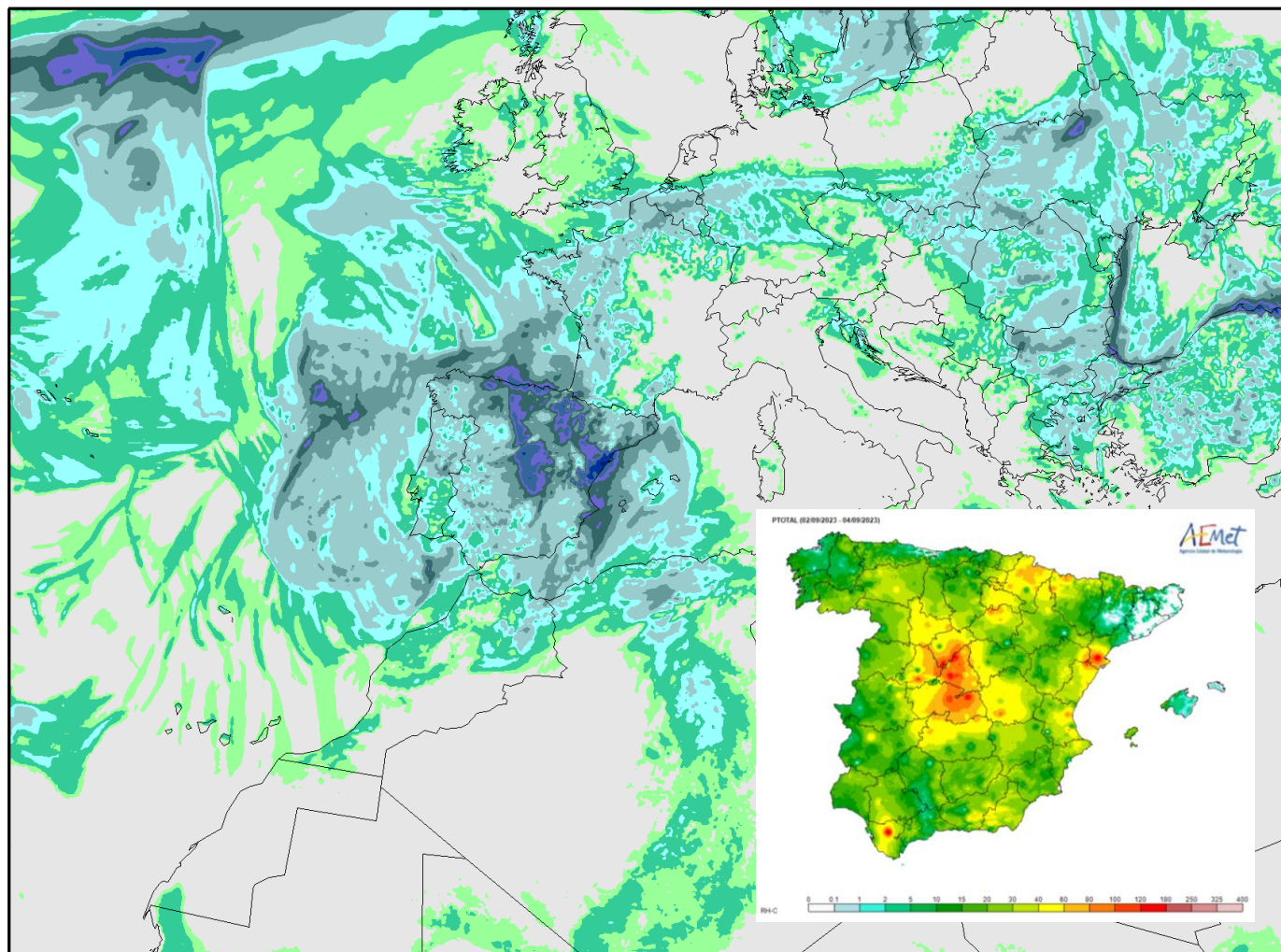
NO ORO



TOTAL ACCUM PRECIP (mm)

Forecast: 96:00h / Valid: 00:00z Tue, 05 Sep 2023

CONTROL

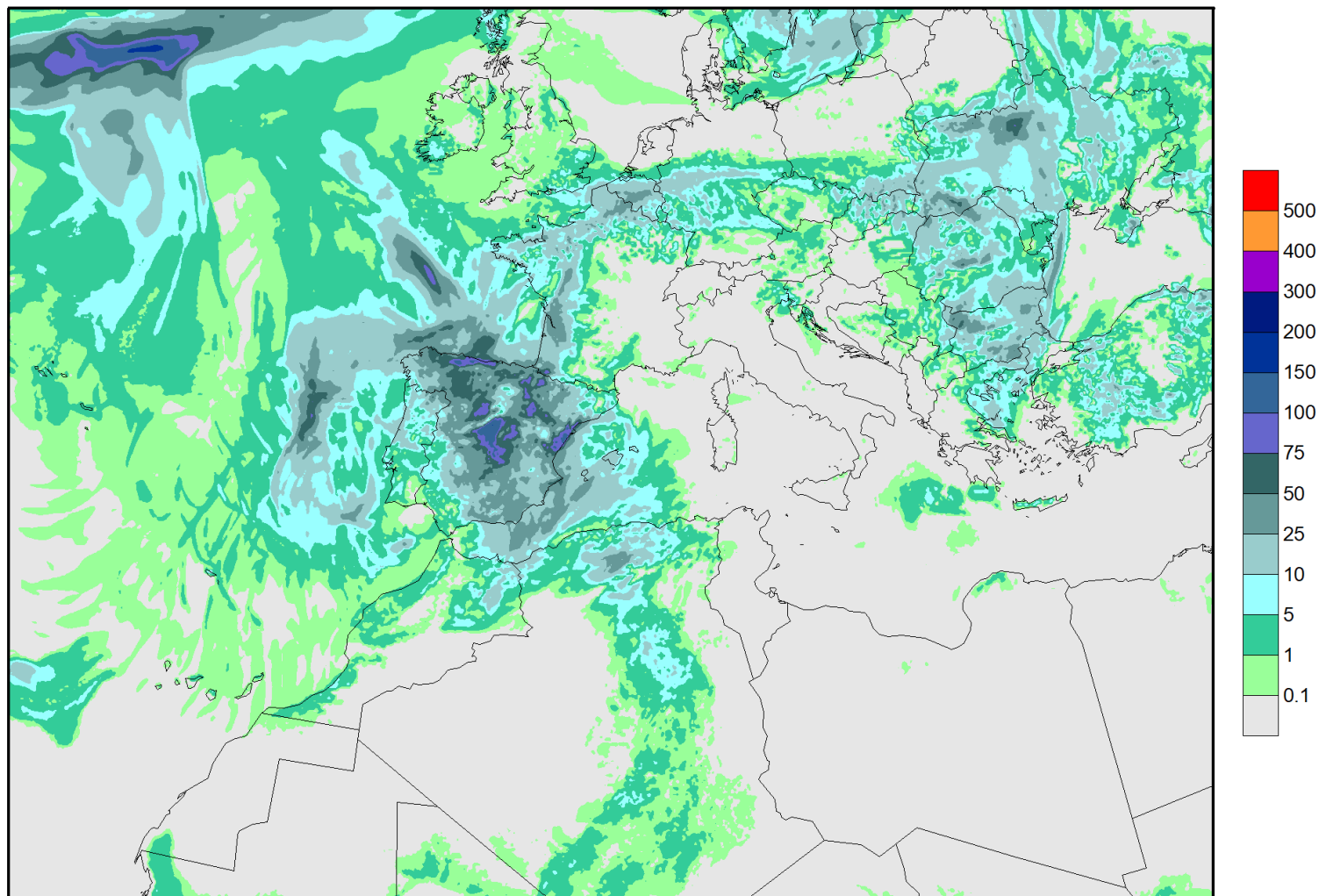




TOTAL ACCUM PRECIP (mm)

Forecast: 96:00h / Valid: 00:00z Tue, 05 Sep 2023

SST -3°C

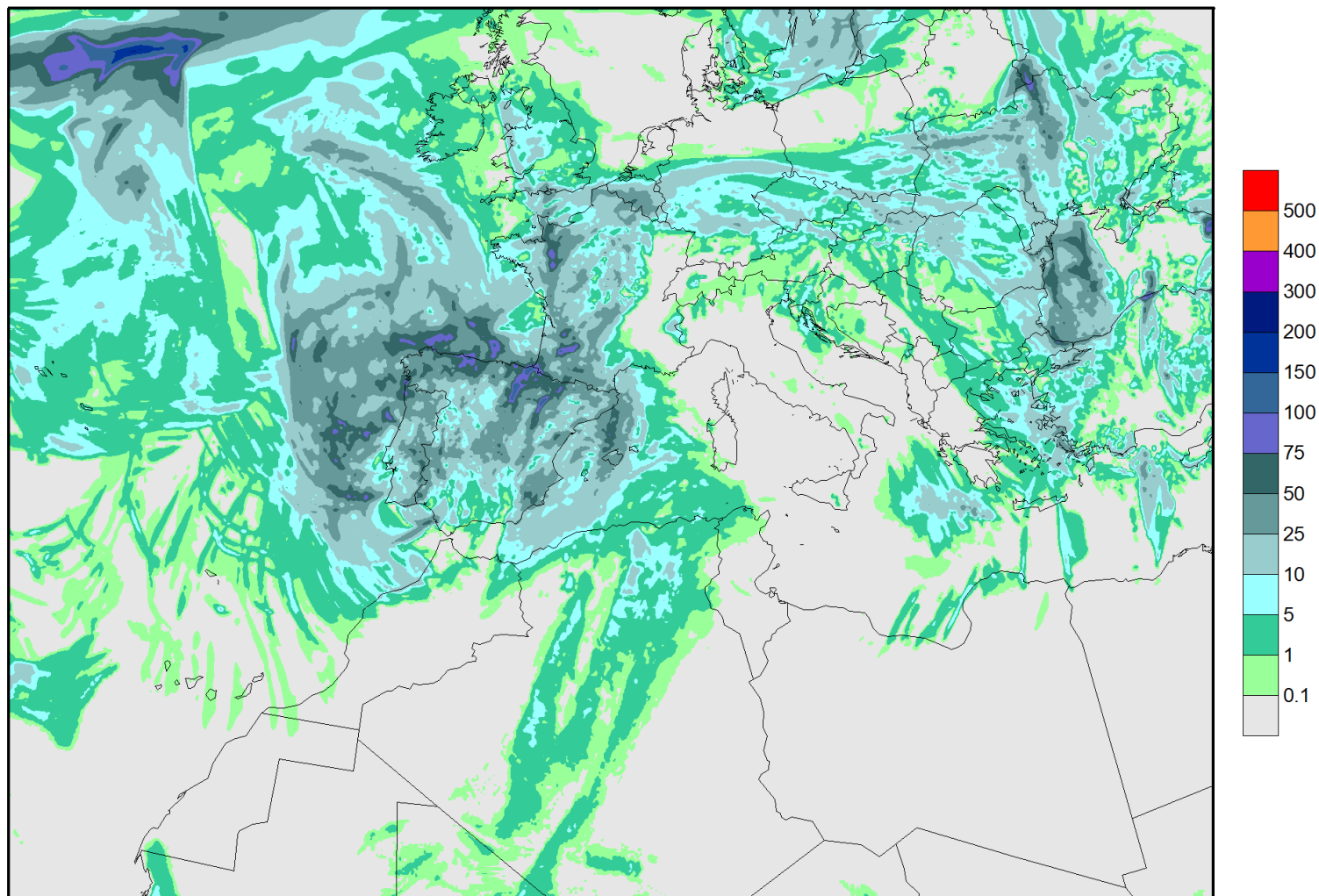




TOTAL ACCUM PRECIP (mm)

Forecast: 96:00h / Valid: 00:00z Tue, 05 Sep 2023

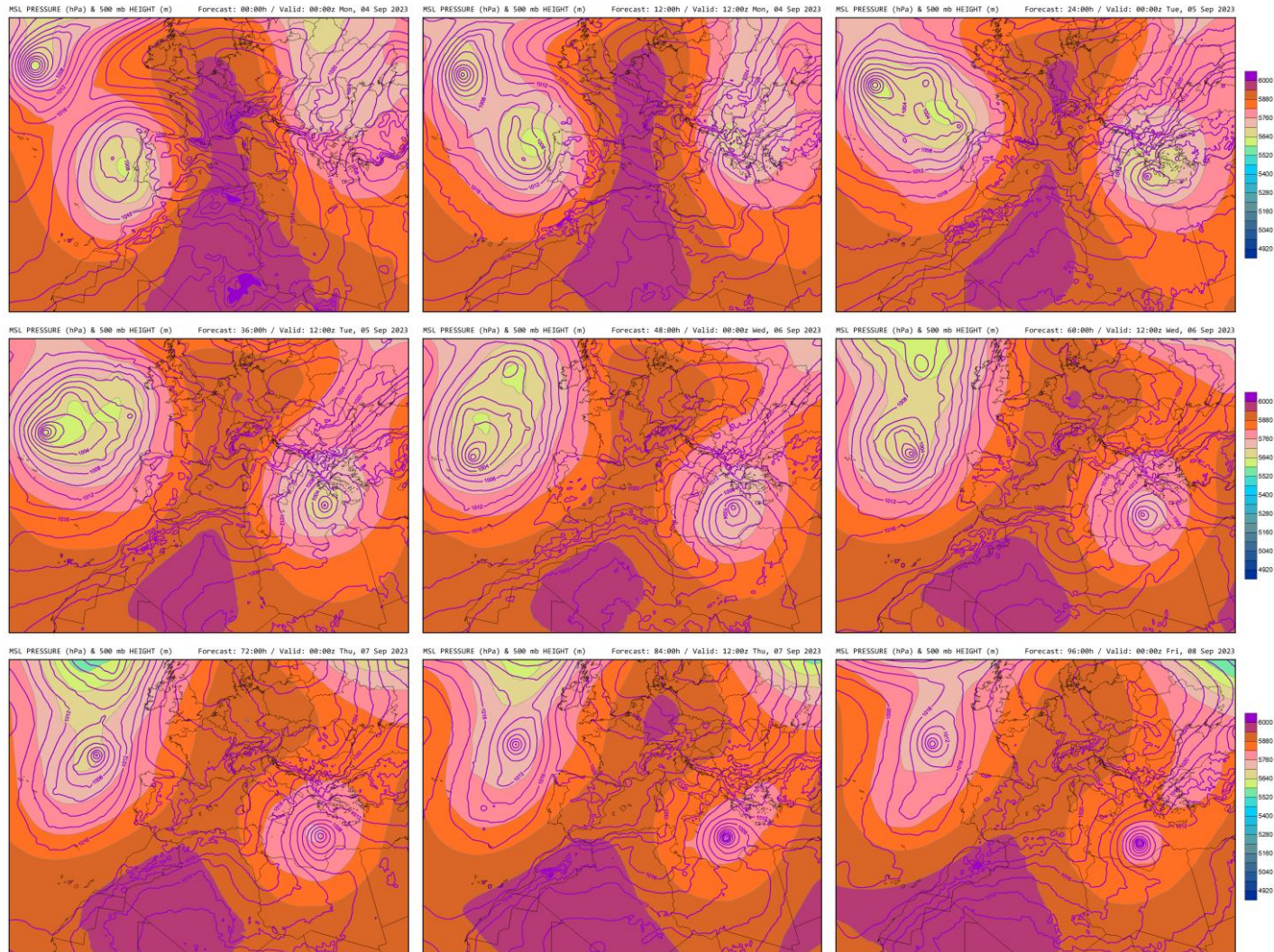
NO ORO



3. GREEK PHASE (MR-double resol.)  
(04 Sep 00UTC – 08 Sep 00UTC)

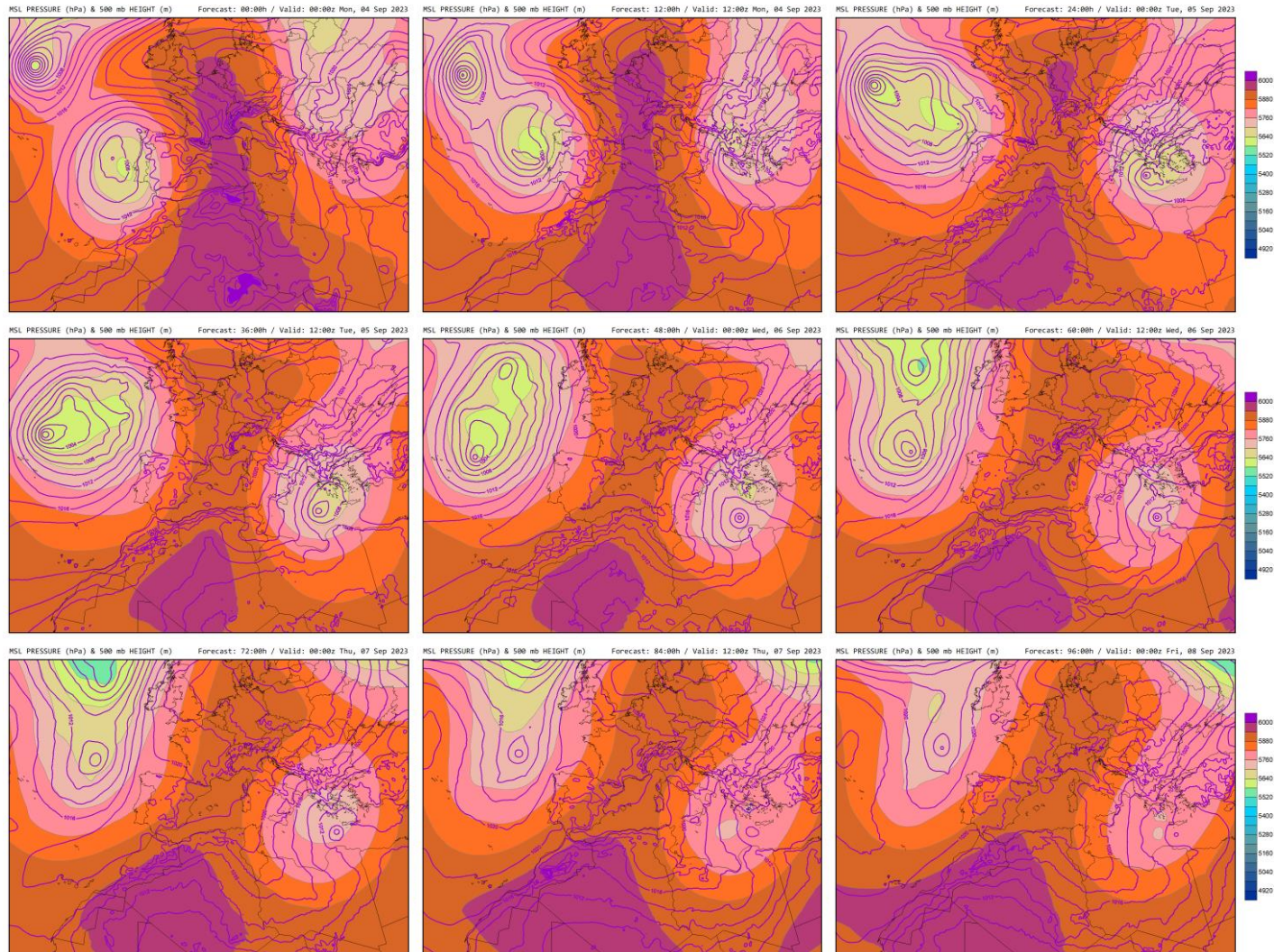
*Daniel? – QPF? – Flood potential?*

# CONTROL



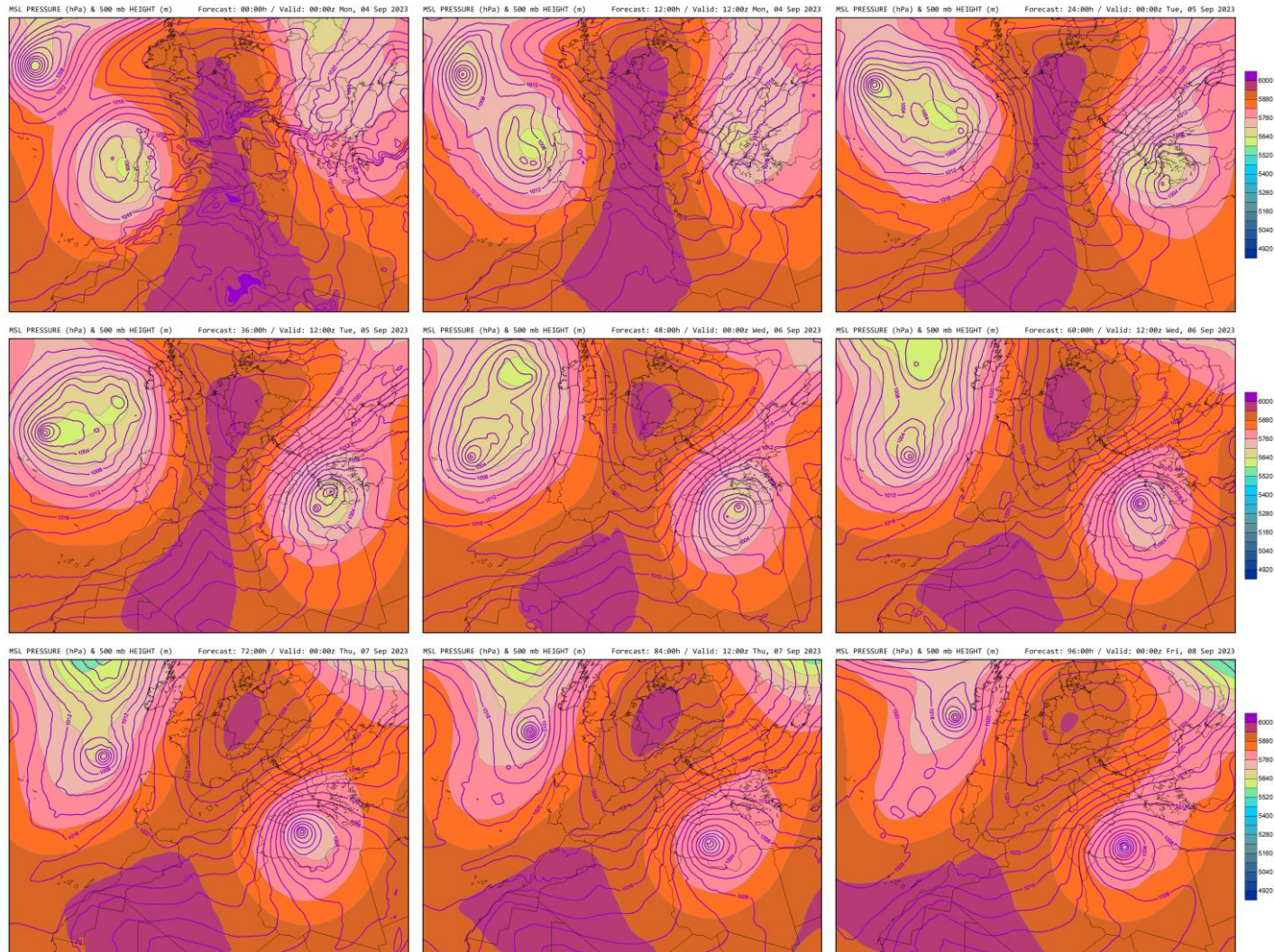


SST -3°C





NO ORO

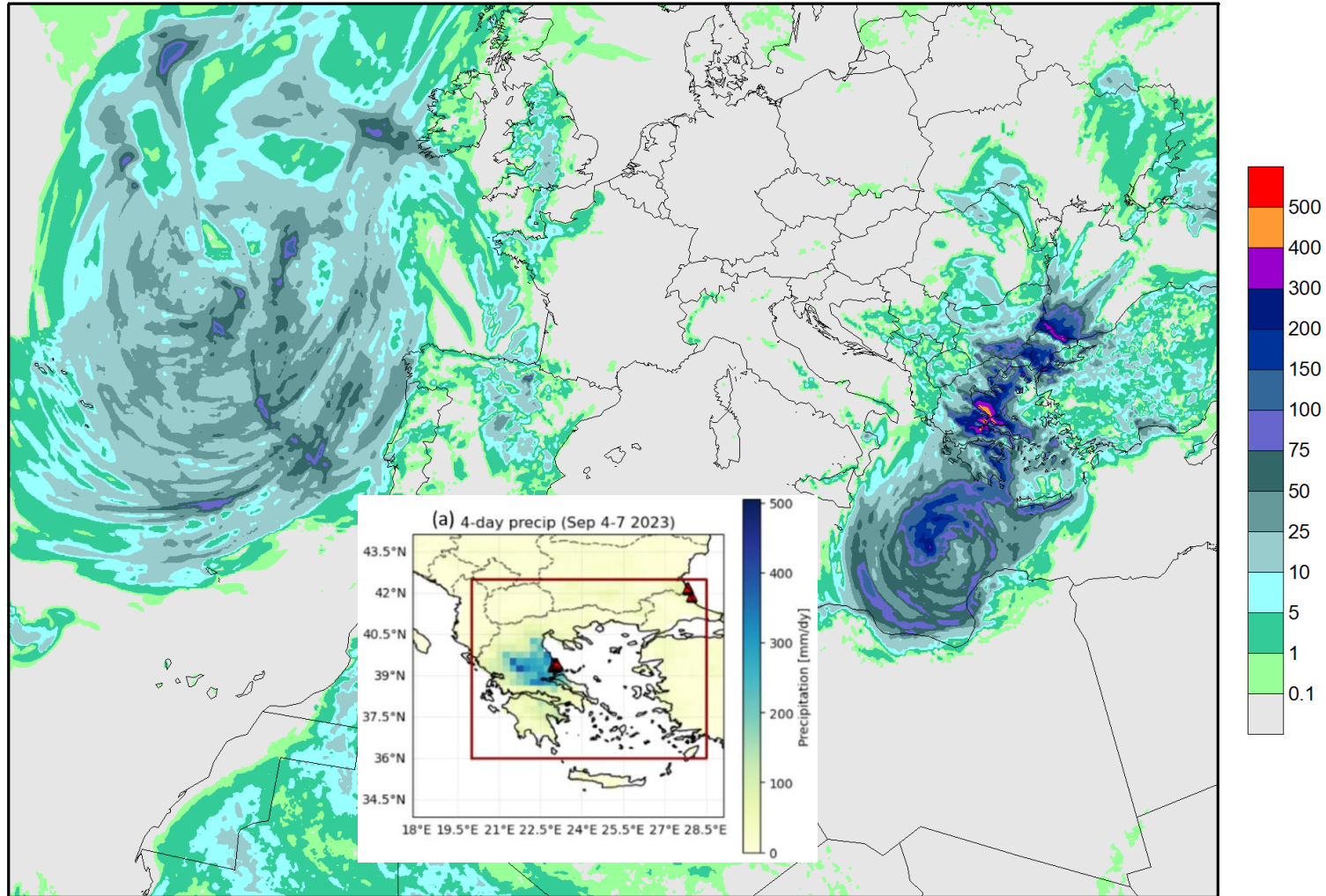




TOTAL ACCUM PRECIP (mm)

Forecast: 96:00h / Valid: 00:00z Fri, 08 Sep 2023

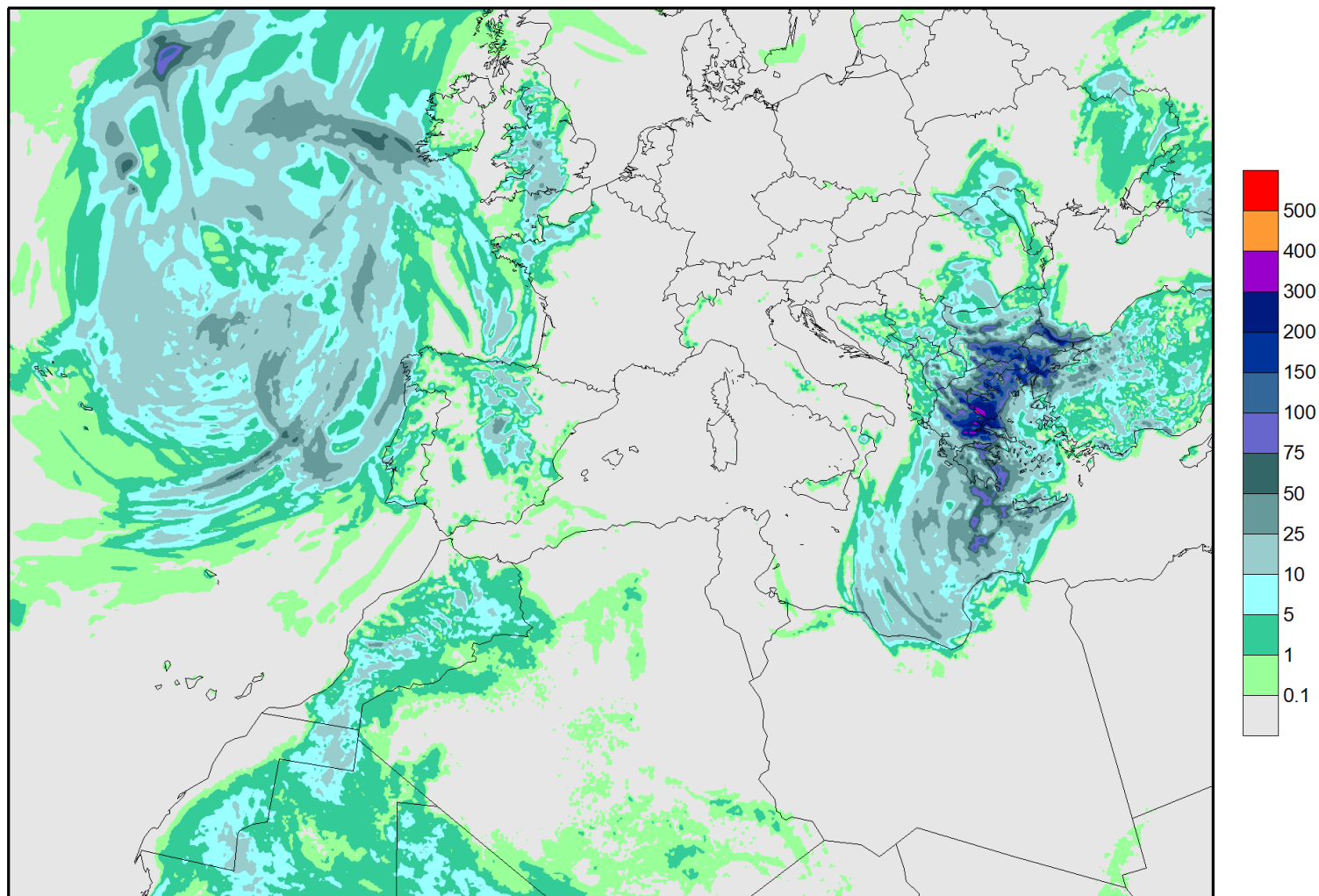
CONTROL



TOTAL ACCUM PRECIP (mm)

Forecast: 96:00h / Valid: 00:00z Fri, 08 Sep 2023

SST -3°C

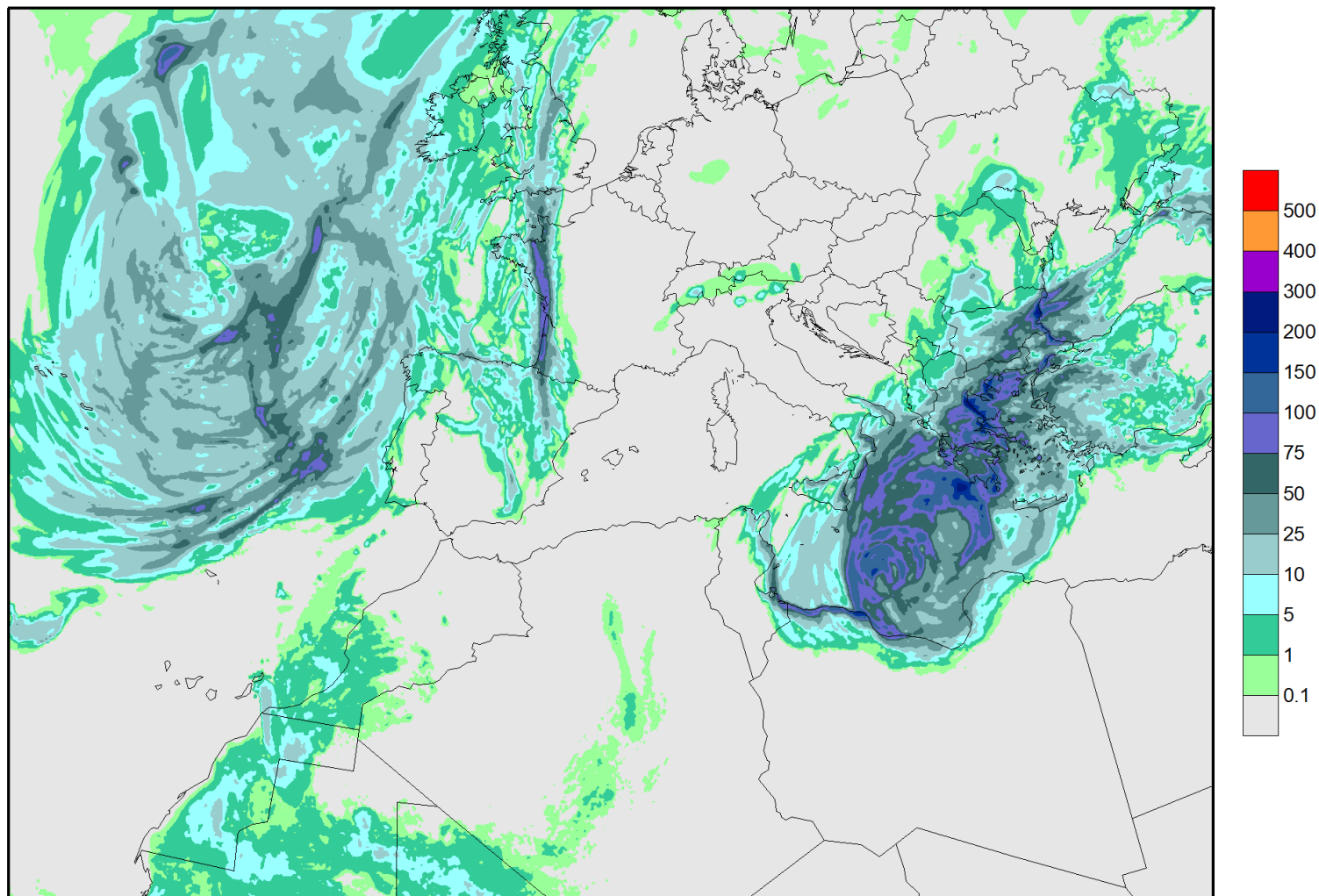




TOTAL ACCUM PRECIP (mm)

Forecast: 96:00h / Valid: 00:00z Fri, 08 Sep 2023

NO ORO

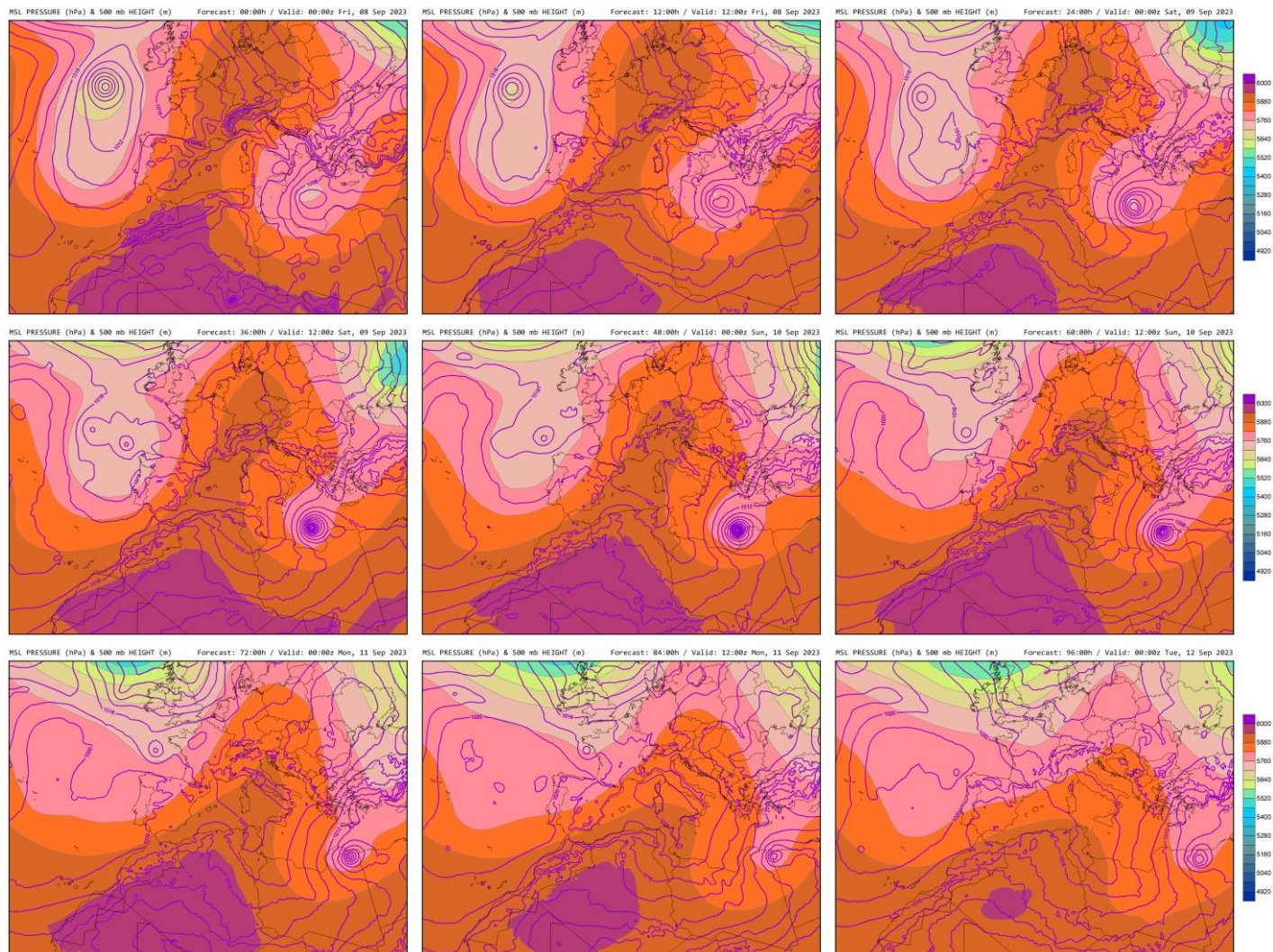


4. LIBYAN PHASE (MR-double resol.)  
(08 Sep 00UTC – 12 Sep 00UTC)

*Medicane? – QPF? – Flood potential?*

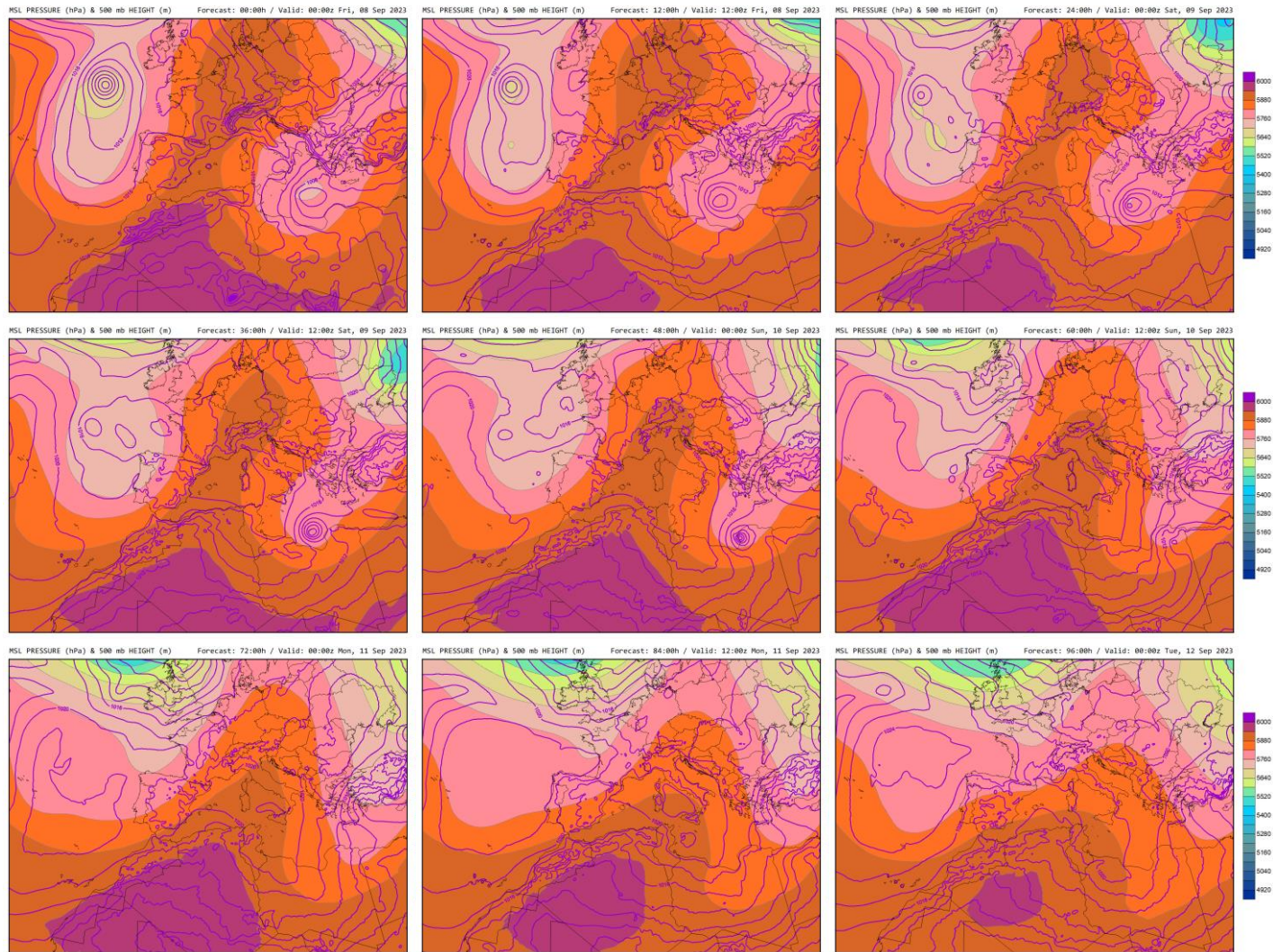


# CONTROL



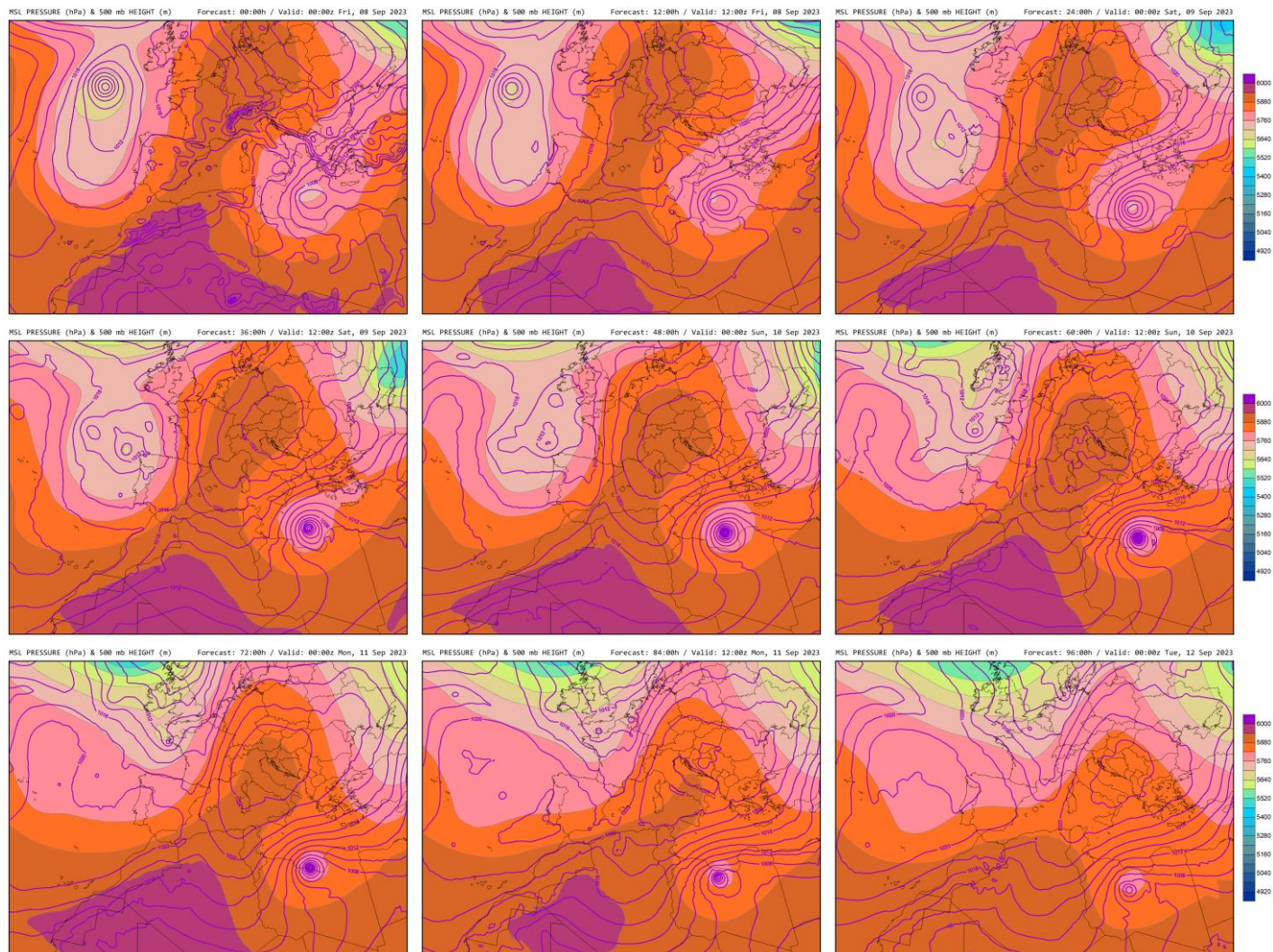


SST -3°C





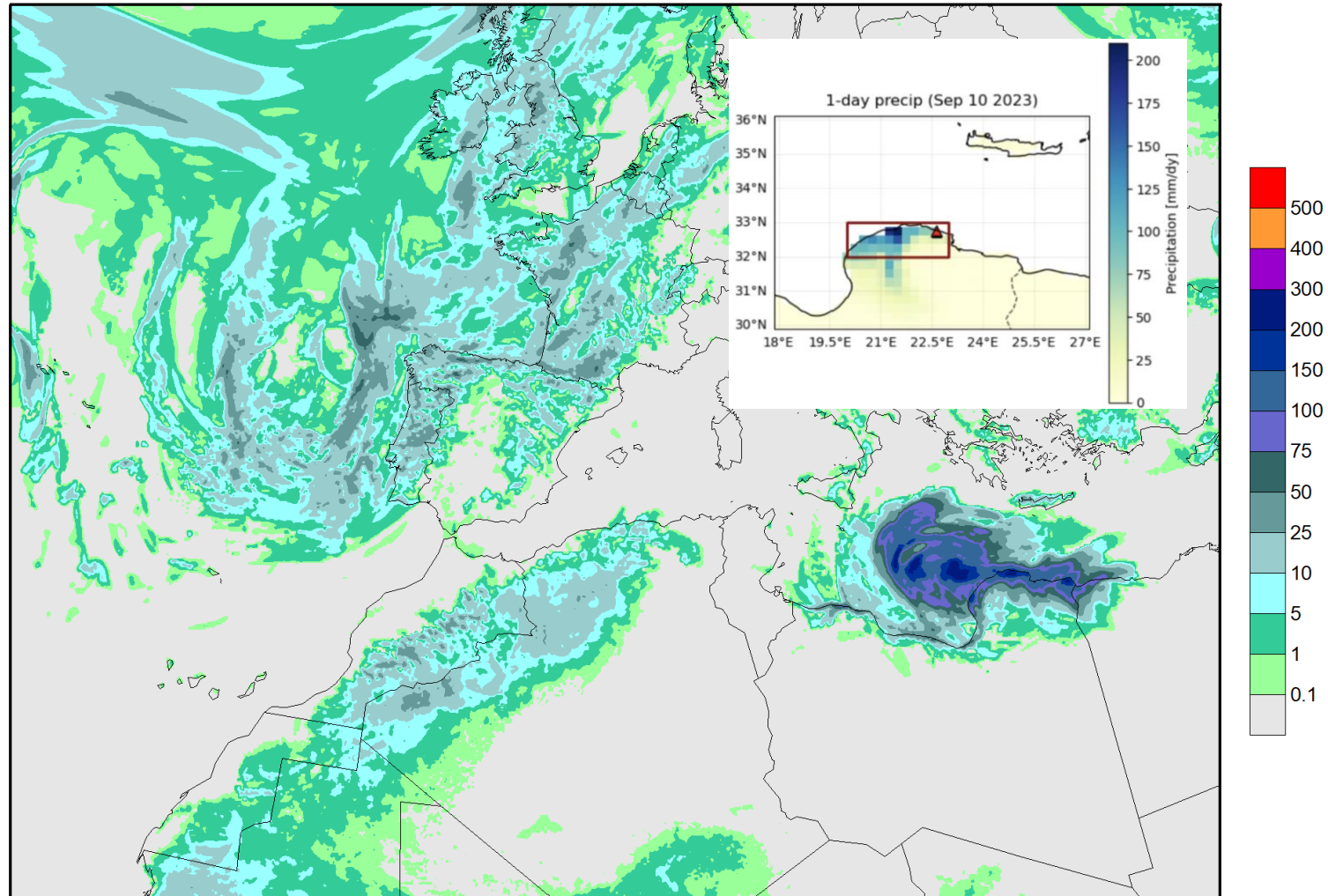
NO ORO



TOTAL ACCUM PRECIP (mm)

Forecast: 96:00h / Valid: 00:00z Tue, 12 Sep 2023

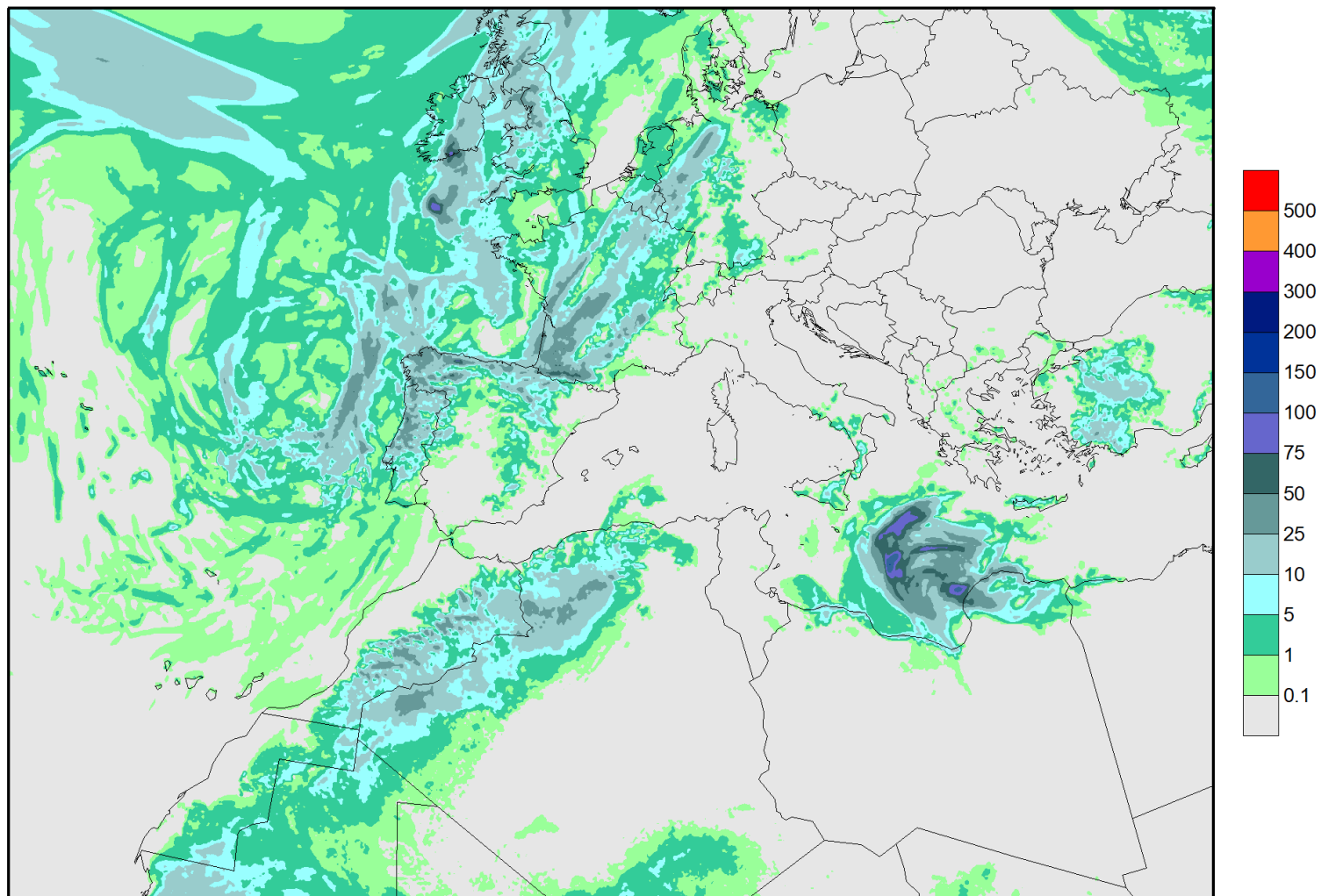
CONTROL



TOTAL ACCUM PRECIP (mm)

Forecast: 96:00h / Valid: 00:00z Tue, 12 Sep 2023

SST -3°C

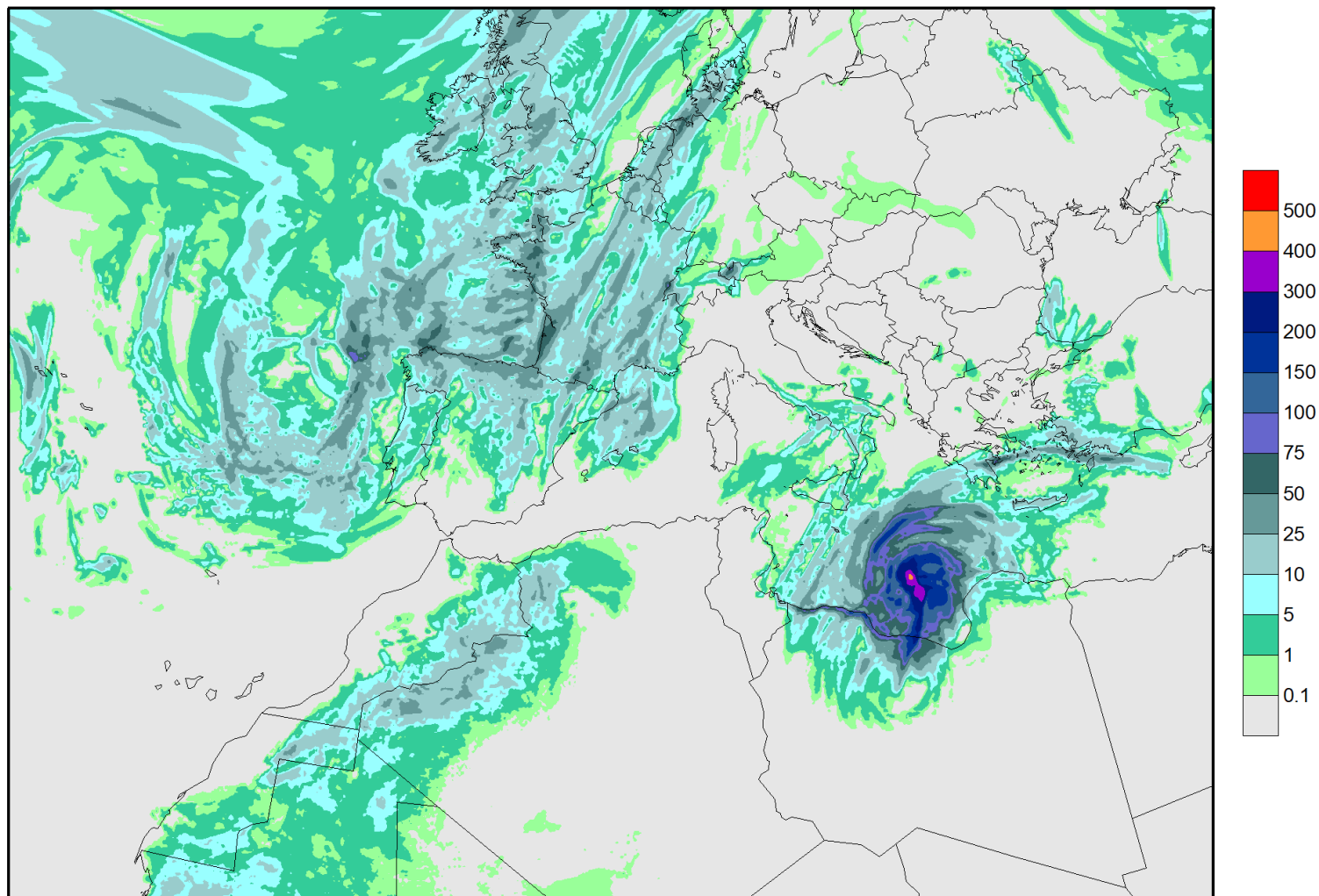




TOTAL ACCUM PRECIP (mm)

Forecast: 96:00h / Valid: 00:00z Tue, 12 Sep 2023

NO ORO





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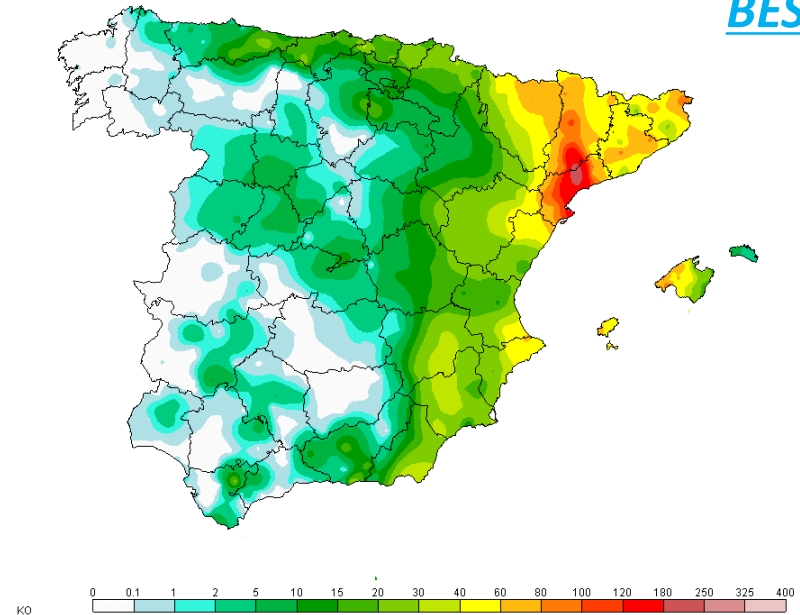


# ***TRAM** Simulations using **ERA5***

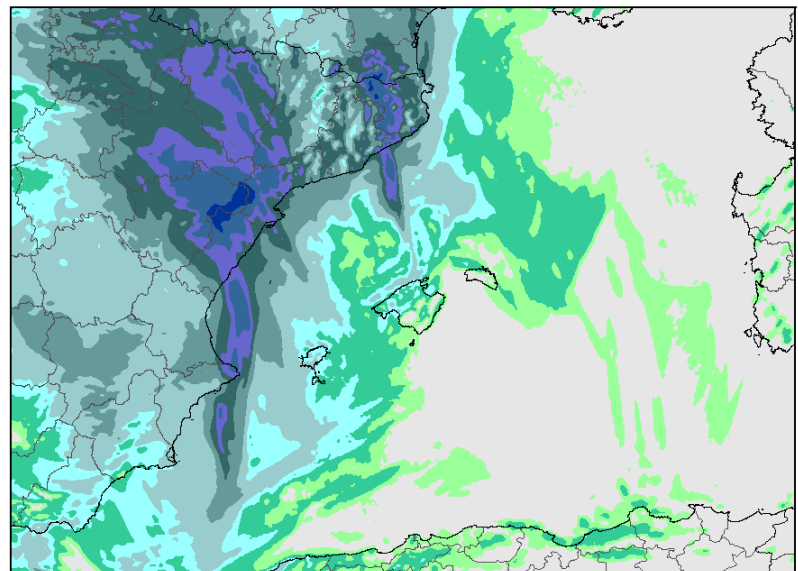
## *Diagnostics & Factors*

> 22/06-23/06 **24h PRECIP** (START TIME is 22/00)

BEST

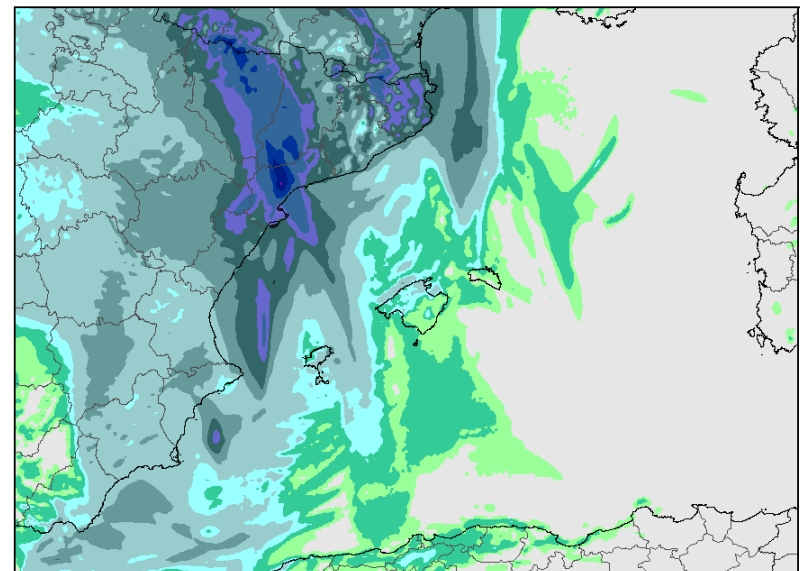


TOTAL ACCUM PRECIP (mm) Forecast: 24:00h / Valid: 06:00z Wed, 23 Oct 2019



GFS

TOTAL ACCUM PRECIP (mm) Forecast: 24:00h / Valid: 06:00z Wed, 23 Oct 2019

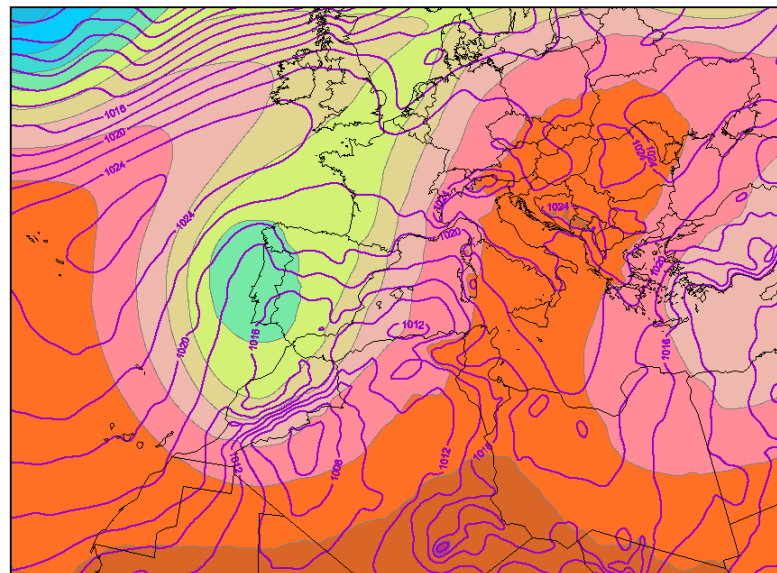


ERA5



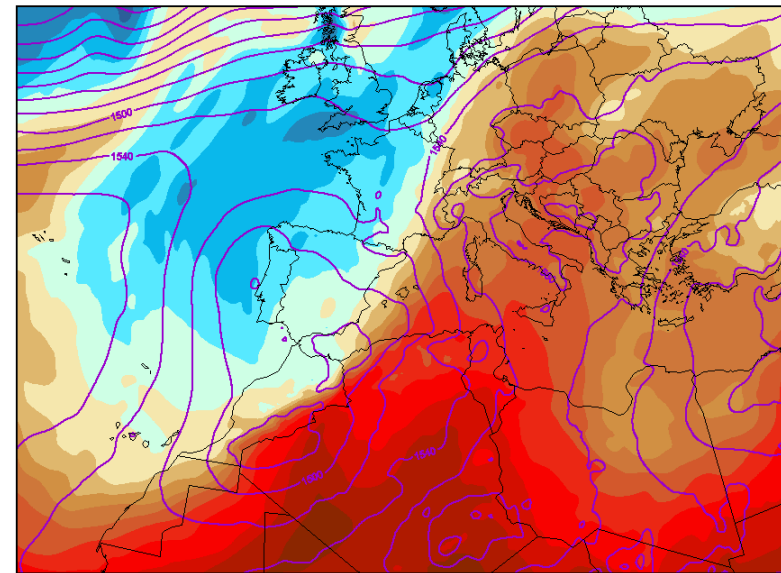
## > ERA5 fields 22 OCTOBER (REANALYSIS TIME as INDICATED)

MSL PRESSURE (hPa) & 500 mb HEIGHT (m) Forecast: 00:00h / Valid: 00:00z Tue, 22 Oct 2019



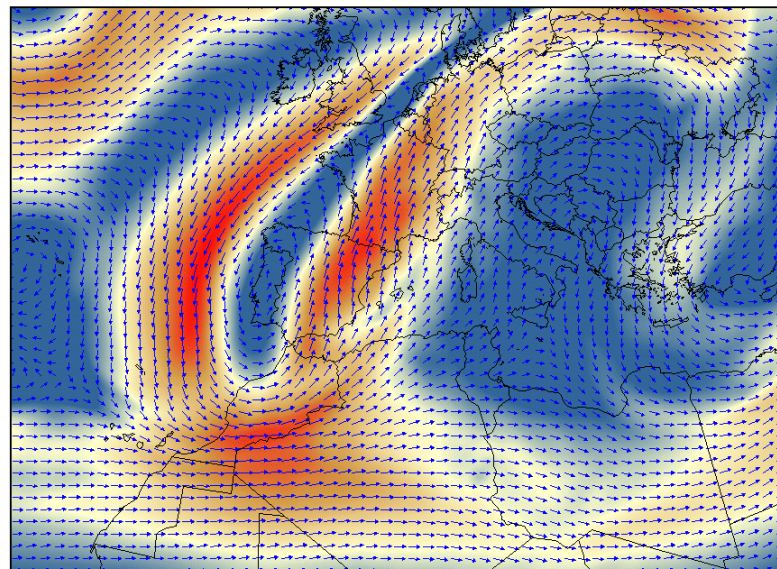
00 UTC

850 mb: HEIGHT (m) & TEMPERATURE (°C) Forecast: 00:00h / Valid: 00:00z Tue, 22 Oct 2019



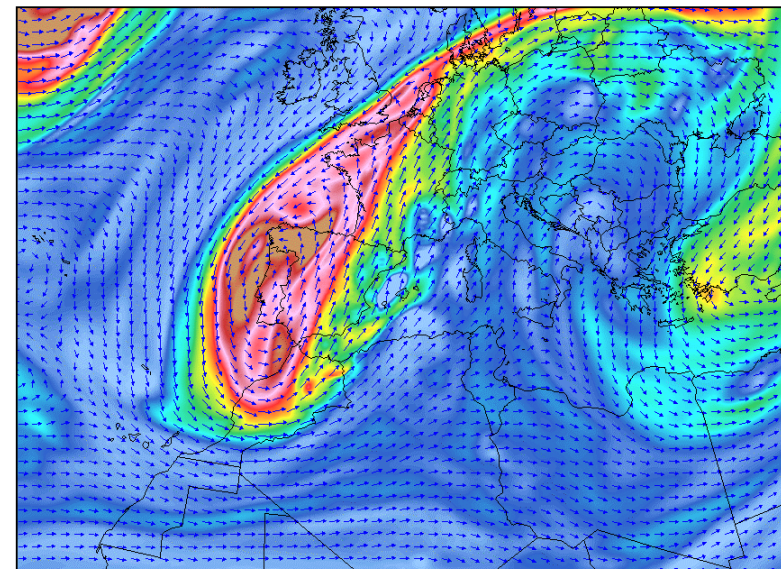
00 UTC

250 hPa WIND SPEED (m/s) Forecast: 00:00h / Valid: 00:00z Tue, 22 Oct 2019



00 UTC

330 K: WIND & POTENTIAL VORTICITY (PVU) Forecast: 00:00h / Valid: 00:00z Tue, 22 Oct 2019

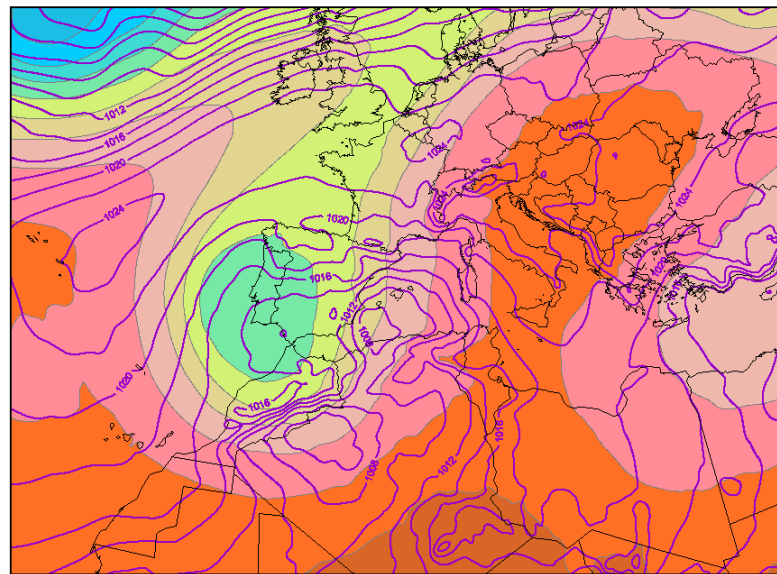


00 UTC



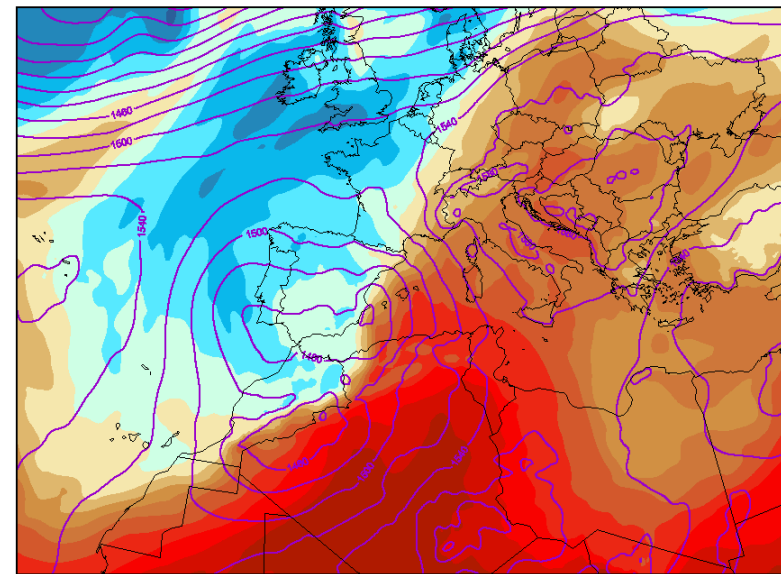
## > ERA5 fields 22 OCTOBER (REANALYSIS TIME as INDICATED)

MSL PRESSURE (hPa) & 500 mb HEIGHT (m) Forecast: 00:00h / Valid: 06:00z Tue, 22 Oct 2019



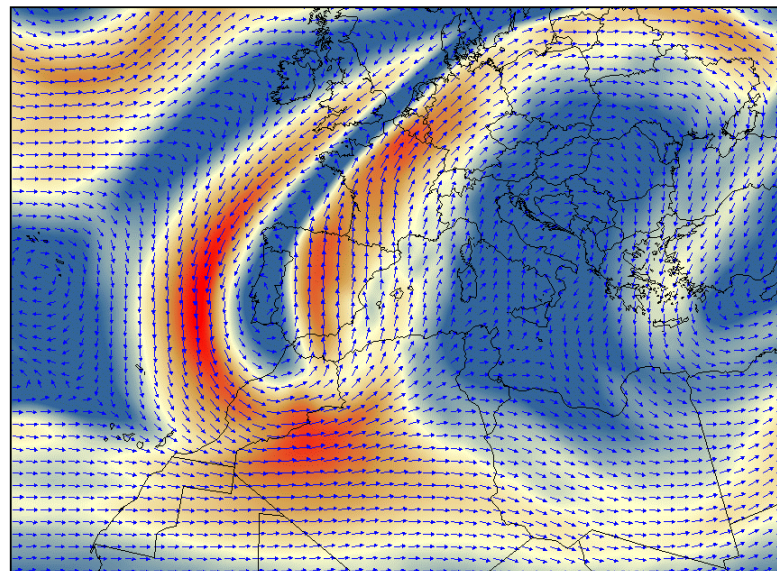
06 UTC

850 mb: HEIGHT (m) & TEMPERATURE (°C) Forecast: 00:00h / Valid: 06:00z Tue, 22 Oct 2019



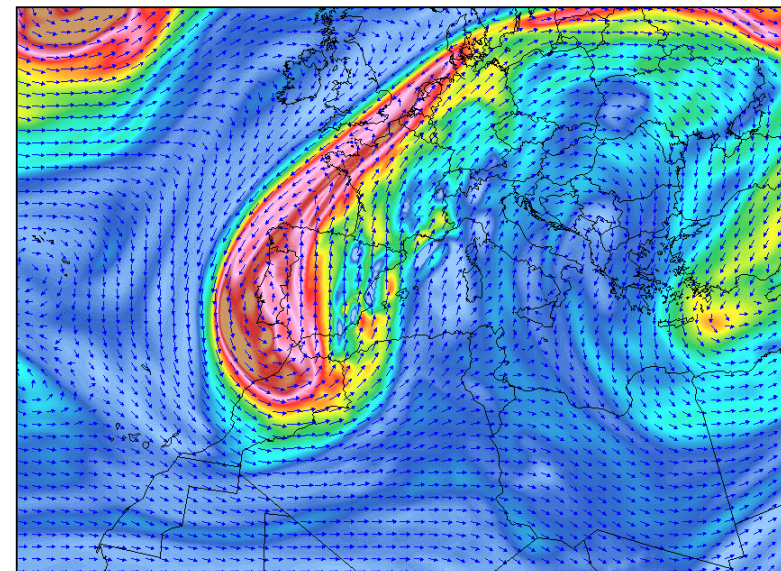
06 UTC

250 hPa WIND SPEED (m/s) Forecast: 00:00h / Valid: 06:00z Tue, 22 Oct 2019



06 UTC

330 K: WIND & POTENTIAL VORTICITY (PVU) Forecast: 00:00h / Valid: 06:00z Tue, 22 Oct 2019

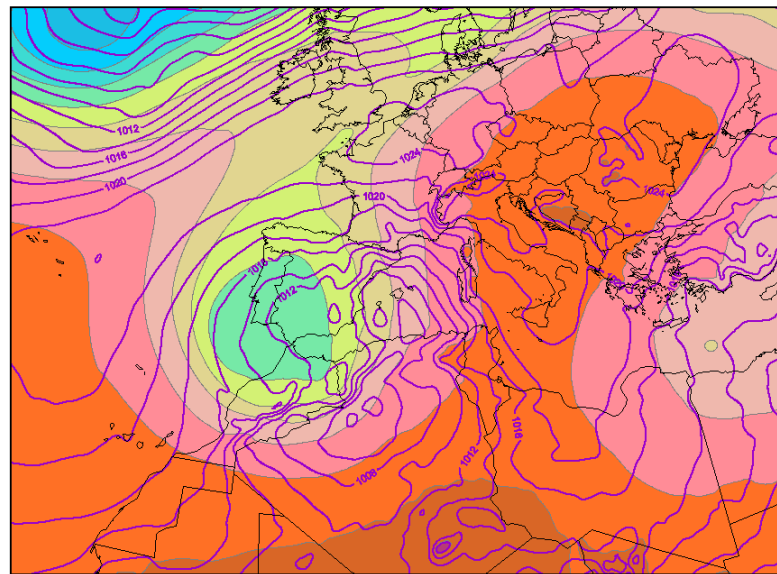


06 UTC



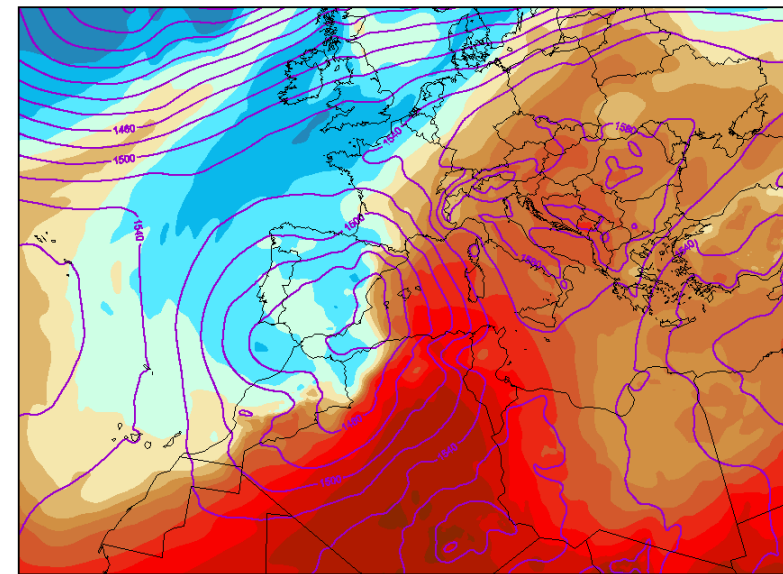
## > ERA5 fields 22 OCTOBER (REANALYSIS TIME as INDICATED)

MSL PRESSURE (hPa) & 500 mb HEIGHT (m) Forecast: 00:00h / Valid: 12:00z Tue, 22 Oct 2019



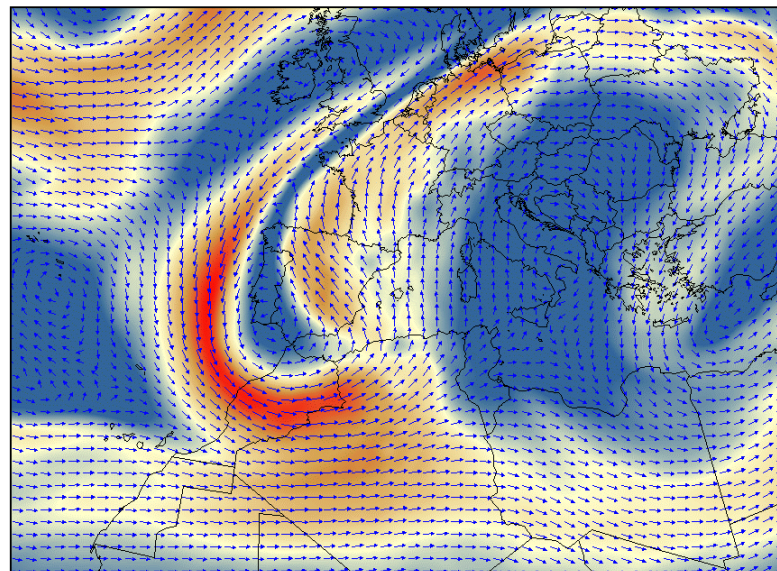
12 UTC

850 mb: HEIGHT (m) & TEMPERATURE (°C) Forecast: 00:00h / Valid: 12:00z Tue, 22 Oct 2019



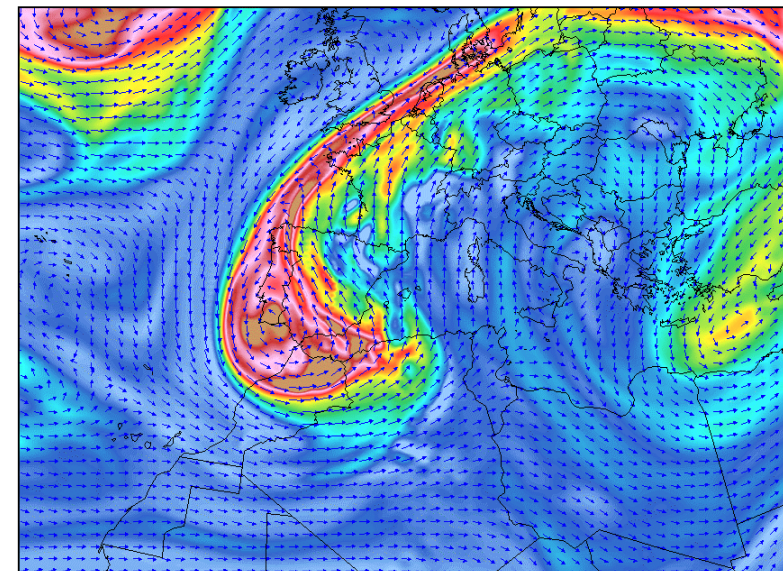
12 UTC

250 hPa WIND SPEED (m/s) Forecast: 00:00h / Valid: 12:00z Tue, 22 Oct 2019



12 UTC

330 K: WIND & POTENTIAL VORTICITY (PVU) Forecast: 00:00h / Valid: 12:00z Tue, 22 Oct 2019

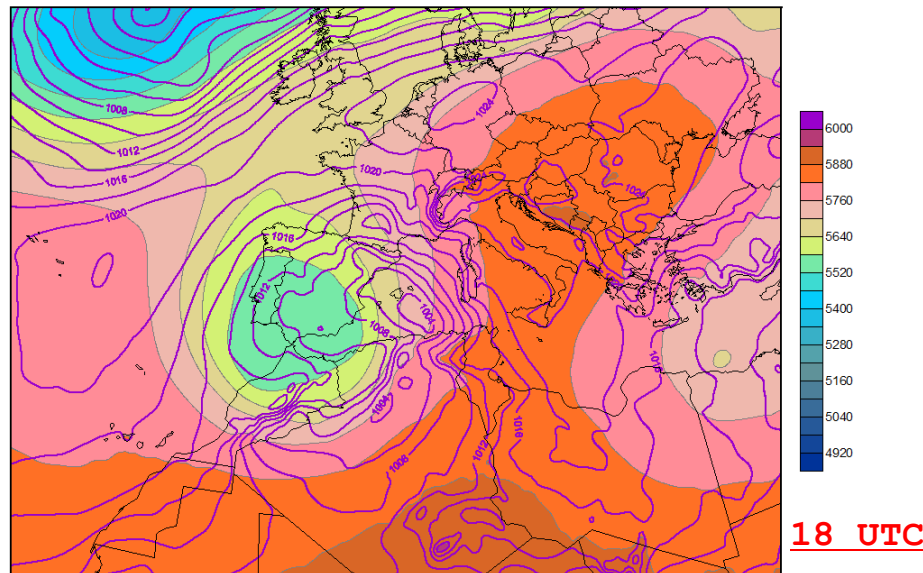


12 UTC

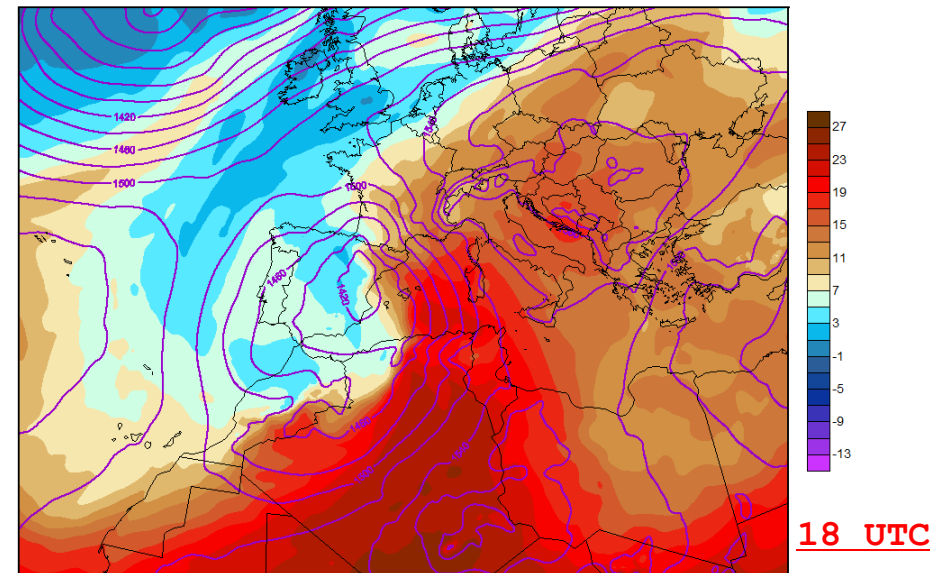


## > ERA5 fields 22 OCTOBER (REANALYSIS TIME as INDICATED)

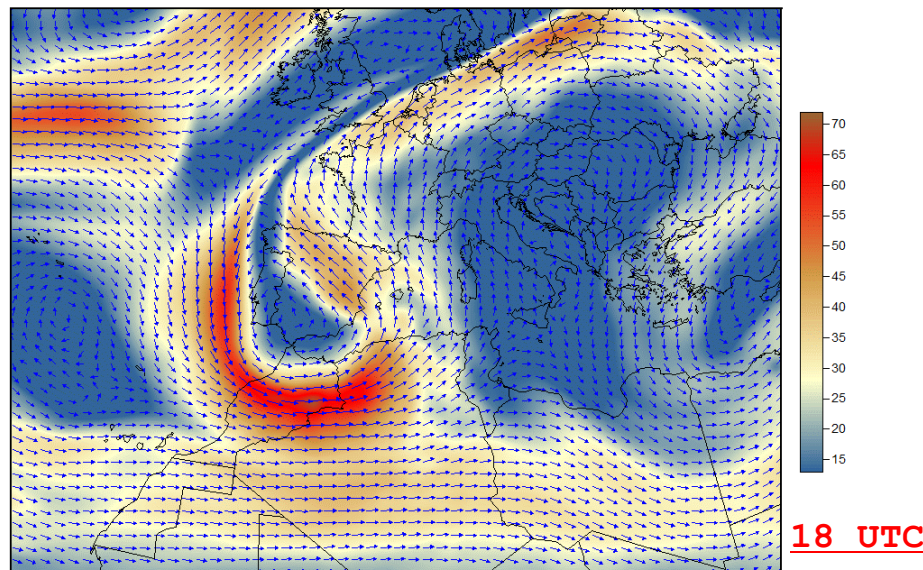
MSL PRESSURE (hPa) & 500 mb HEIGHT (m) Forecast: 00:00h / Valid: 18:00z Tue, 22 Oct 2019



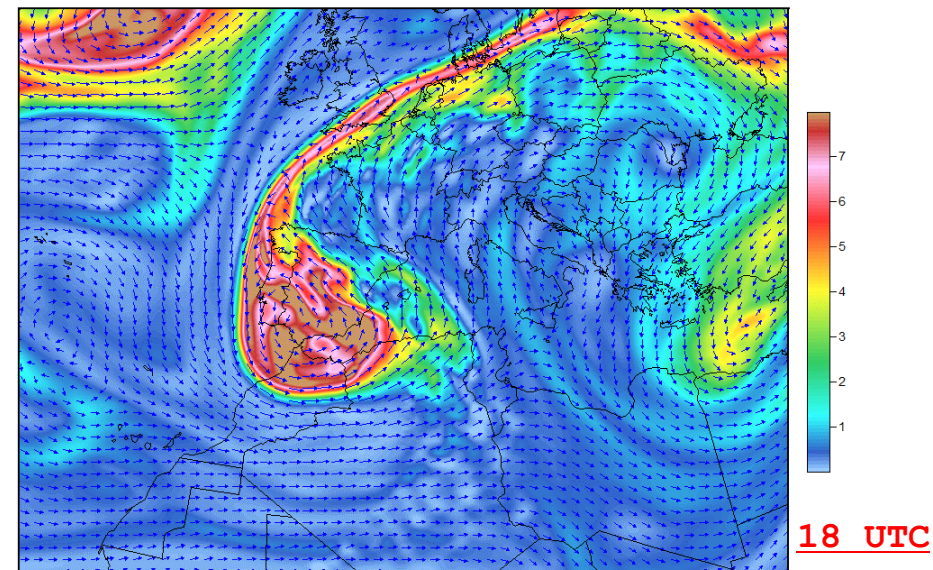
850 mb: HEIGHT (m) & TEMPERATURE (°C) Forecast: 00:00h / Valid: 18:00z Tue, 22 Oct 2019



250 hPa WIND SPEED (m/s) Forecast: 00:00h / Valid: 18:00z Tue, 22 Oct 2019



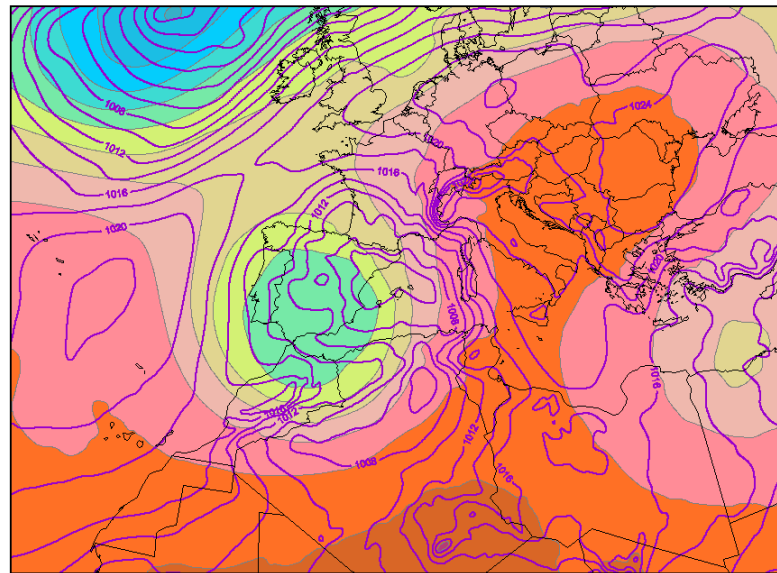
330 K: WIND & POTENTIAL VORTICITY (PVU) Forecast: 00:00h / Valid: 18:00z Tue, 22 Oct 2019





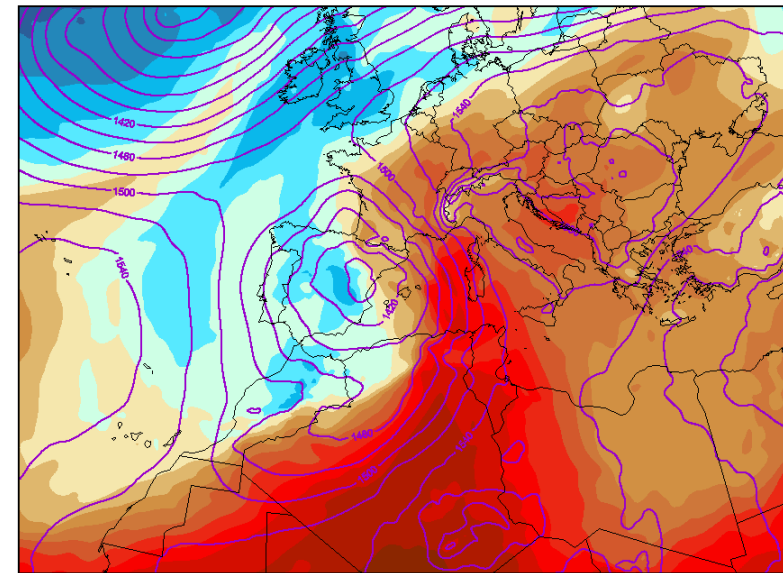
## > ERA5 fields 23 OCTOBER (REANALYSIS TIME as INDICATED)

MSL PRESSURE (hPa) & 500 mb HEIGHT (m) Forecast: 00:00h / Valid: 00:00z Wed, 23 Oct 2019



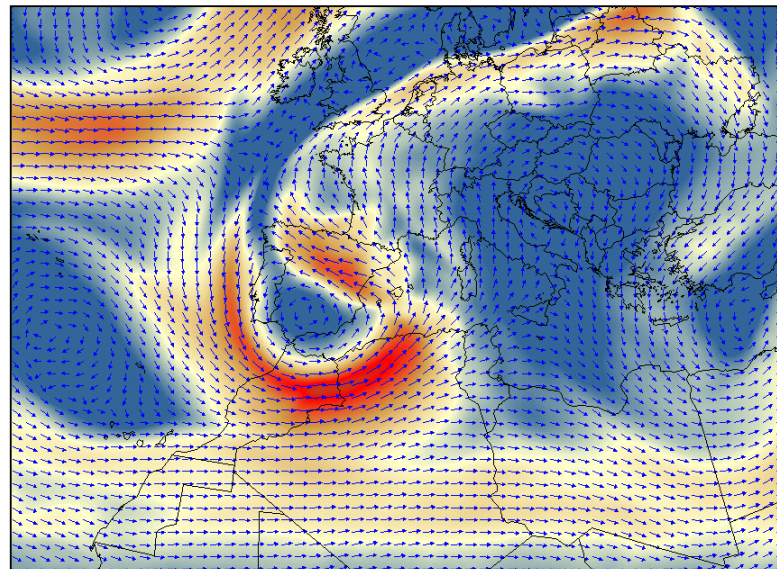
00 UTC

850 mb: HEIGHT (m) & TEMPERATURE (°C) Forecast: 00:00h / Valid: 00:00z Wed, 23 Oct 2019



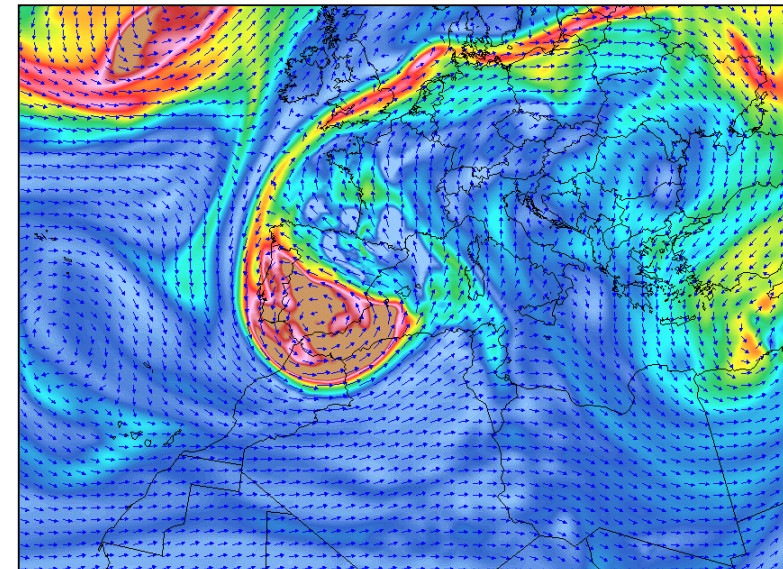
00 UTC

250 hPa WIND SPEED (m/s) Forecast: 00:00h / Valid: 00:00z Wed, 23 Oct 2019



00 UTC

330 K: WIND & POTENTIAL VORTICITY (PVU) Forecast: 00:00h / Valid: 00:00z Wed, 23 Oct 2019

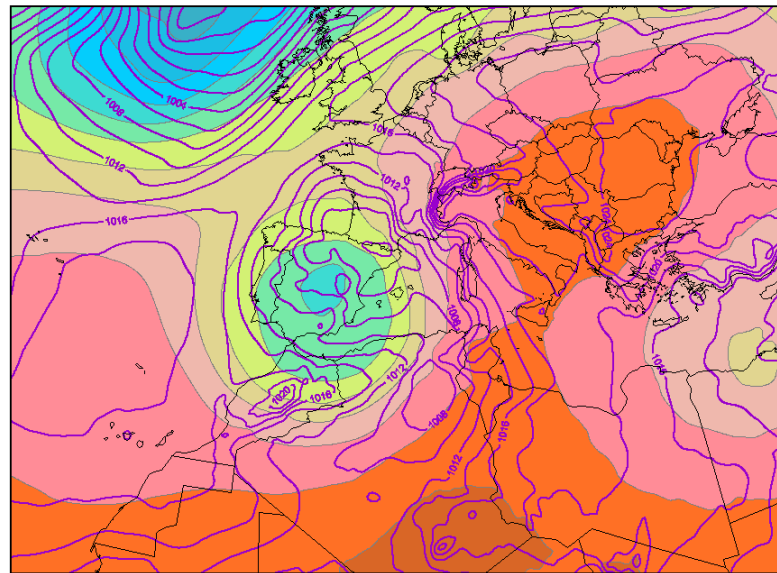


00 UTC



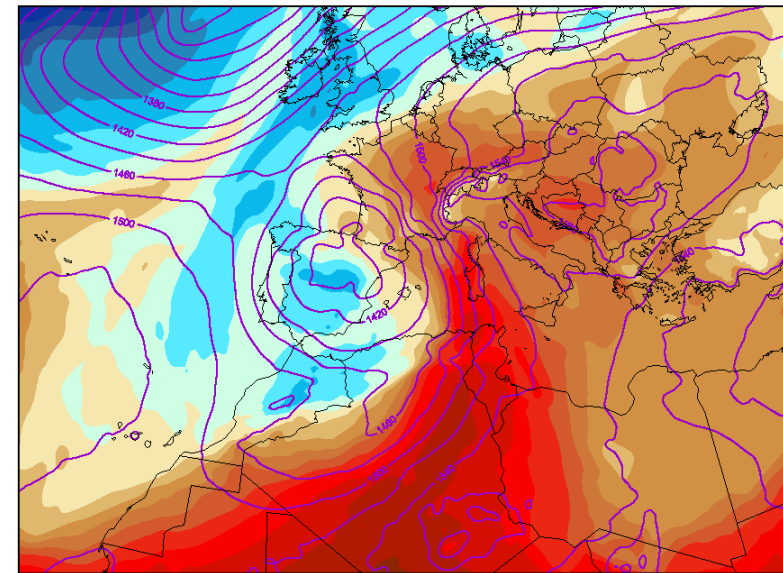
## > ERA5 fields 23 OCTOBER (REANALYSIS TIME as INDICATED)

MSL PRESSURE (hPa) & 500 mb HEIGHT (m) Forecast: 00:00h / Valid: 06:00z Wed, 23 Oct 2019



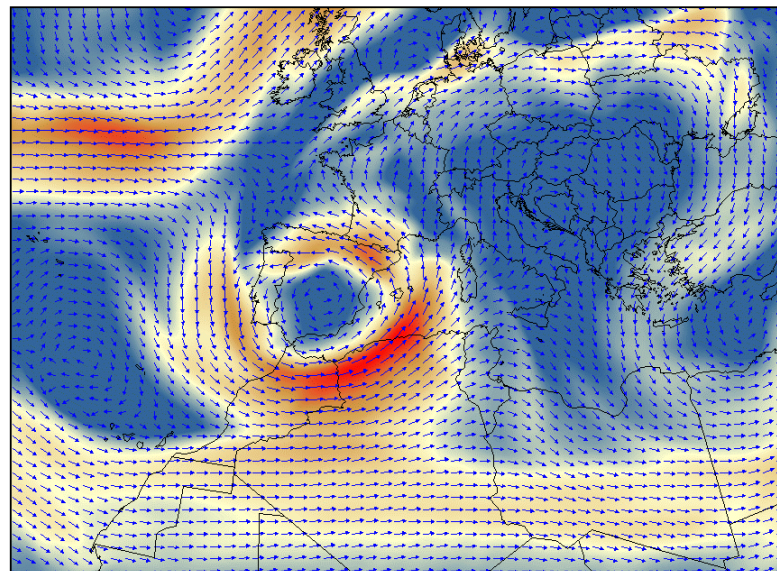
06 UTC

850 mb: HEIGHT (m) & TEMPERATURE (°C) Forecast: 00:00h / Valid: 06:00z Wed, 23 Oct 2019



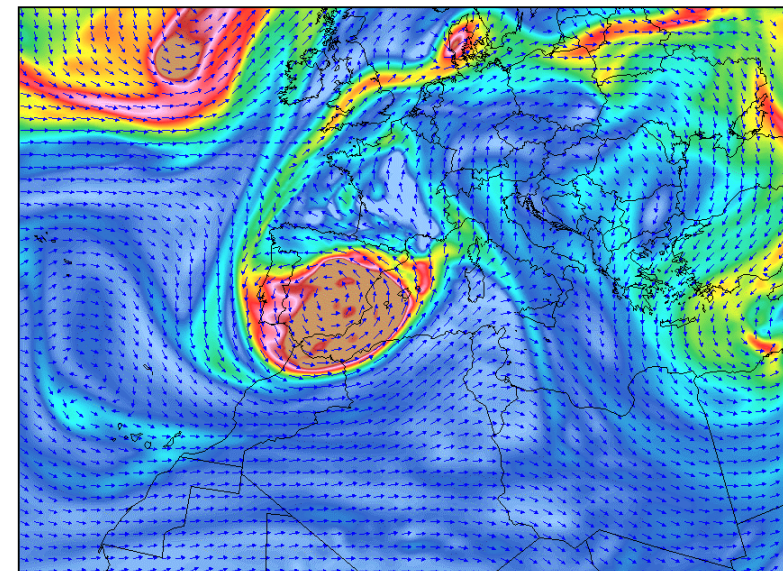
06 UTC

250 hPa WIND SPEED (m/s) Forecast: 00:00h / Valid: 06:00z Wed, 23 Oct 2019



06 UTC

330 K: WIND & POTENTIAL VORTICITY (PVU) Forecast: 00:00h / Valid: 06:00z Wed, 23 Oct 2019

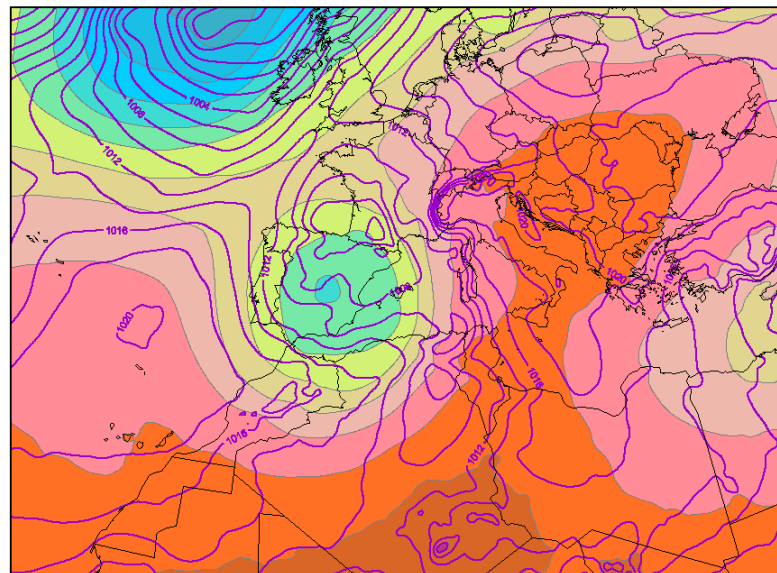


06 UTC



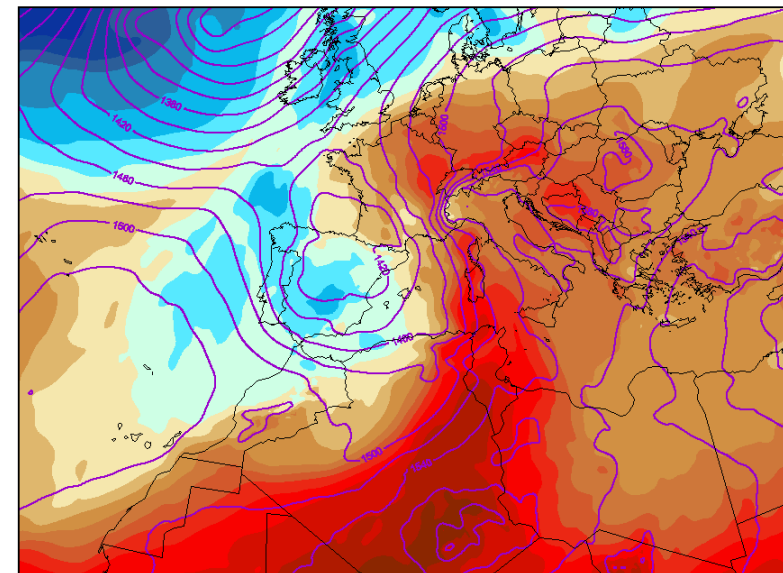
## > ERA5 fields **23 OCTOBER** (REANALYSIS TIME as INDICATED)

MSL PRESSURE (hPa) & 500 mb HEIGHT (m) Forecast: 00:00h / Valid: 12:00z Wed, 23 Oct 2019



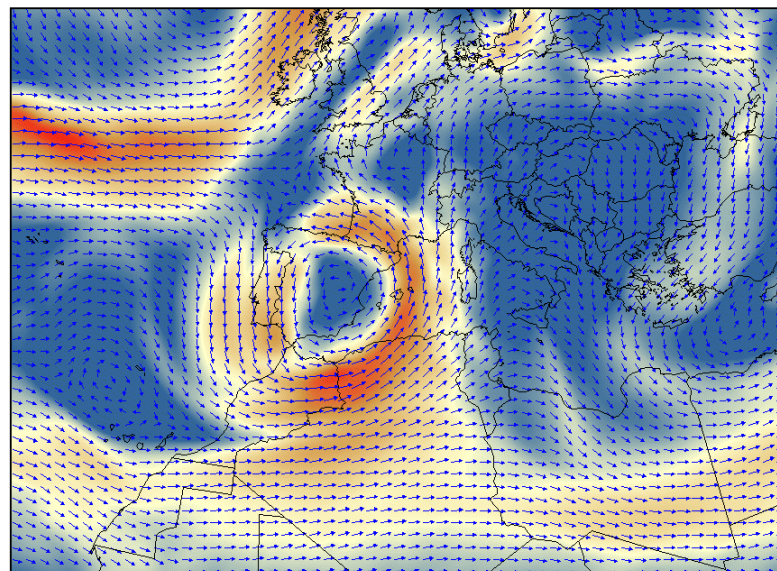
12 UTC

850 mb: HEIGHT (m) & TEMPERATURE (°C) Forecast: 00:00h / Valid: 12:00z Wed, 23 Oct 2019



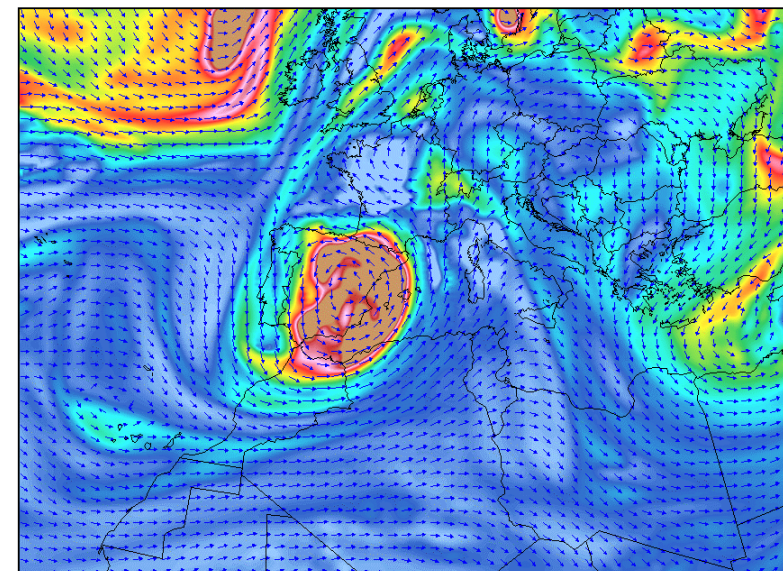
12 UTC

250 hPa WIND SPEED (m/s) Forecast: 00:00h / Valid: 12:00z Wed, 23 Oct 2019



12 UTC

330 K: WIND & POTENTIAL VORTICITY (PVU) Forecast: 00:00h / Valid: 12:00z Wed, 23 Oct 2019

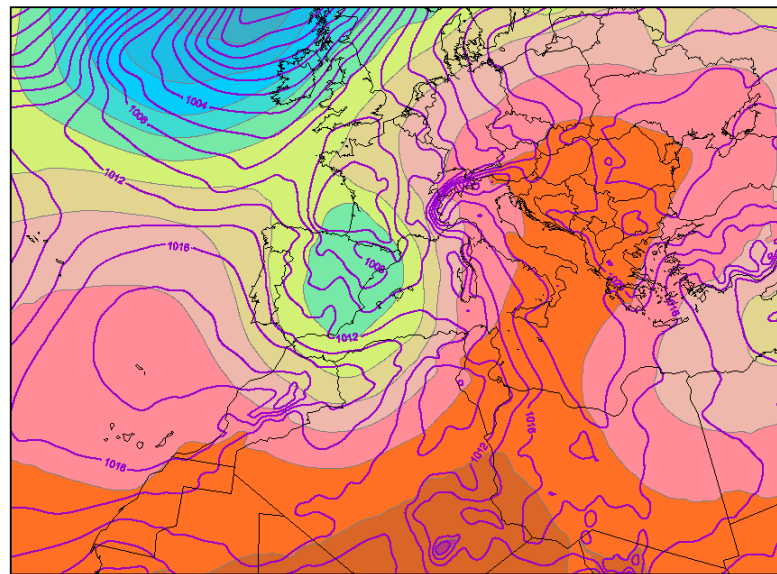


12 UTC



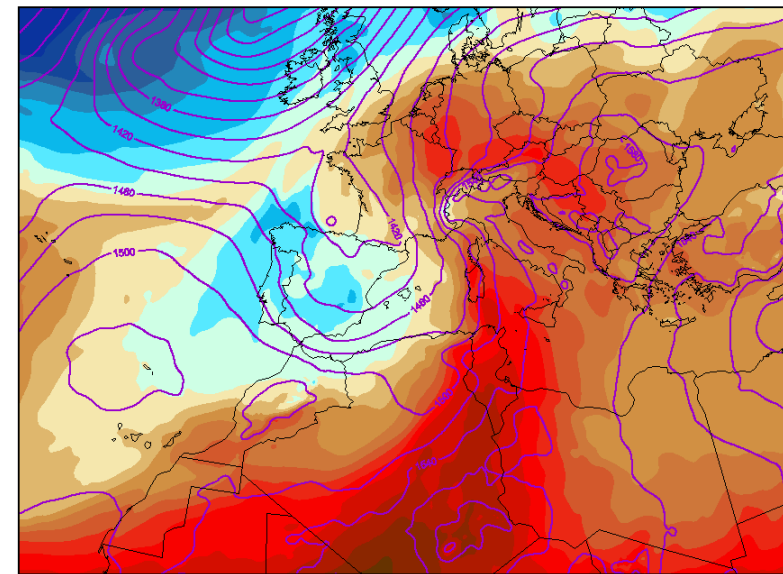
## > ERA5 fields 23 OCTOBER (REANALYSIS TIME as INDICATED)

MSL PRESSURE (hPa) & 500 mb HEIGHT (m) Forecast: 00:00h / Valid: 18:00z Wed, 23 Oct 2019



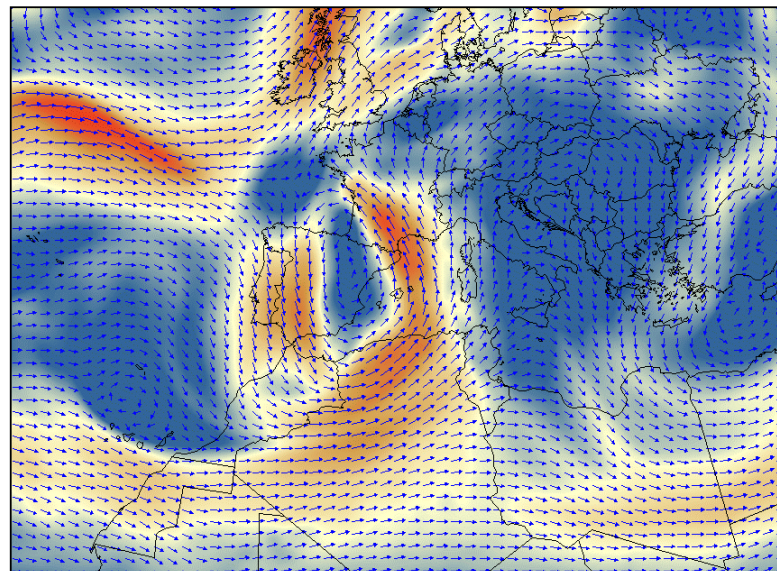
18 UTC

850 mb: HEIGHT (m) & TEMPERATURE (°C) Forecast: 00:00h / Valid: 18:00z Wed, 23 Oct 2019



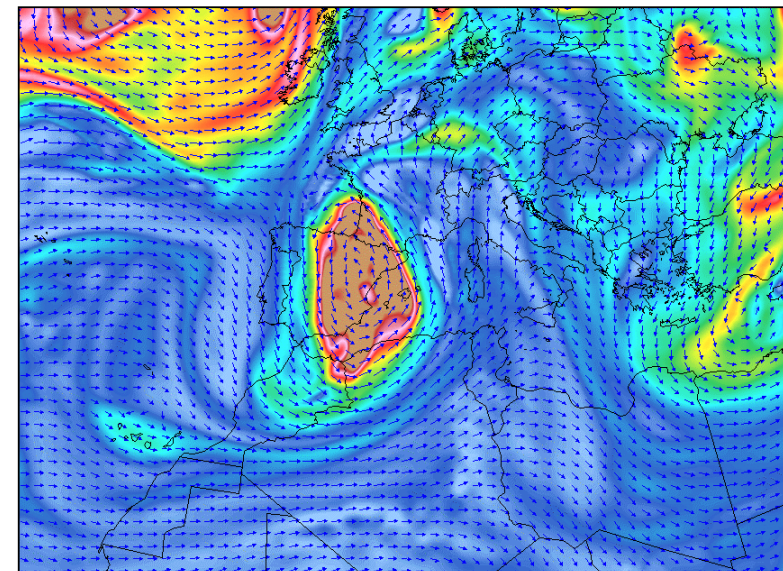
18 UTC

250 hPa WIND SPEED (m/s) Forecast: 00:00h / Valid: 18:00z Wed, 23 Oct 2019



18 UTC

330 K: WIND & POTENTIAL VORTICITY (PVU) Forecast: 00:00h / Valid: 18:00z Wed, 23 Oct 2019

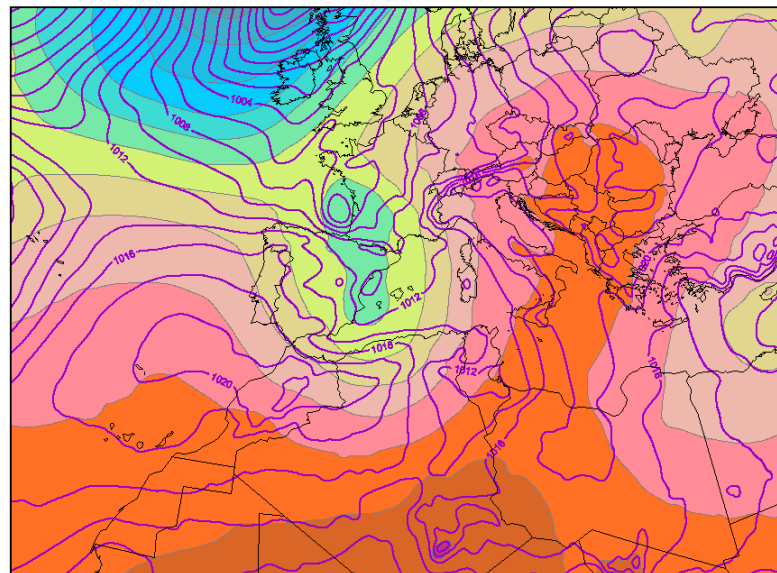


18 UTC



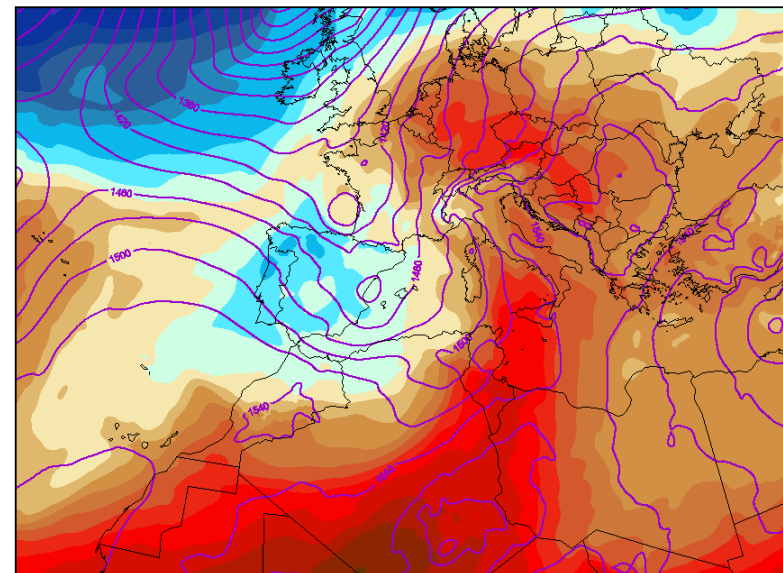
## > ERA5 fields 24 OCTOBER (REANALYSIS TIME as INDICATED)

MSL PRESSURE (hPa) & 500 mb HEIGHT (m) Forecast: 00:00h / Valid: 00:00z Thu, 24 Oct 2019



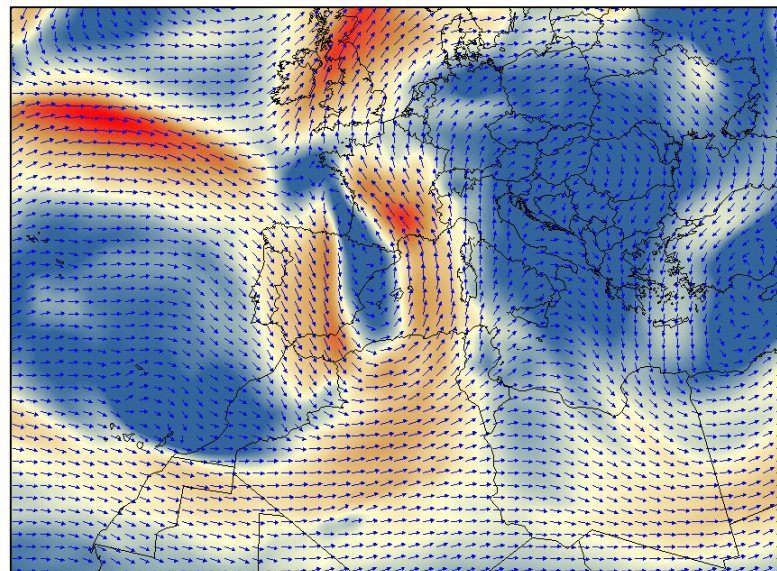
00 UTC

850 mb: HEIGHT (m) & TEMPERATURE (°C) Forecast: 00:00h / Valid: 00:00z Thu, 24 Oct 2019



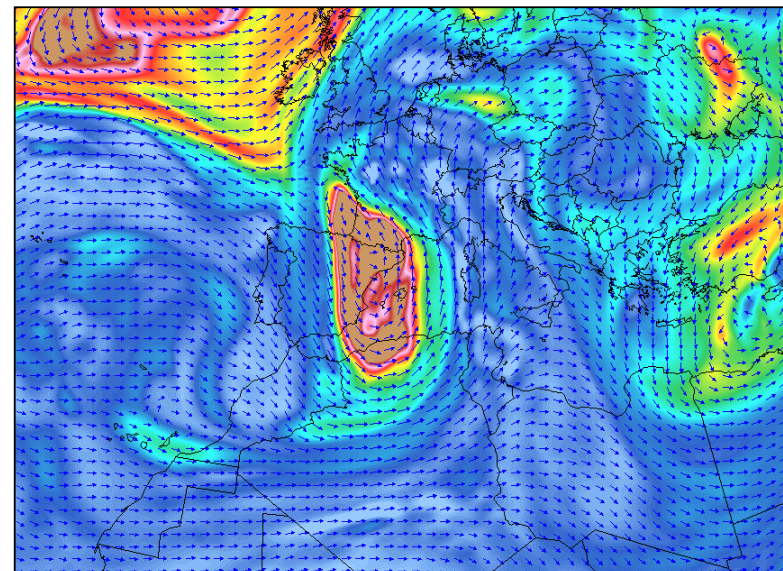
00 UTC

250 hPa WIND SPEED (m/s) Forecast: 00:00h / Valid: 00:00z Thu, 24 Oct 2019



00 UTC

330 K: WIND & POTENTIAL VORTICITY (PVU) Forecast: 00:00h / Valid: 00:00z Thu, 24 Oct 2019

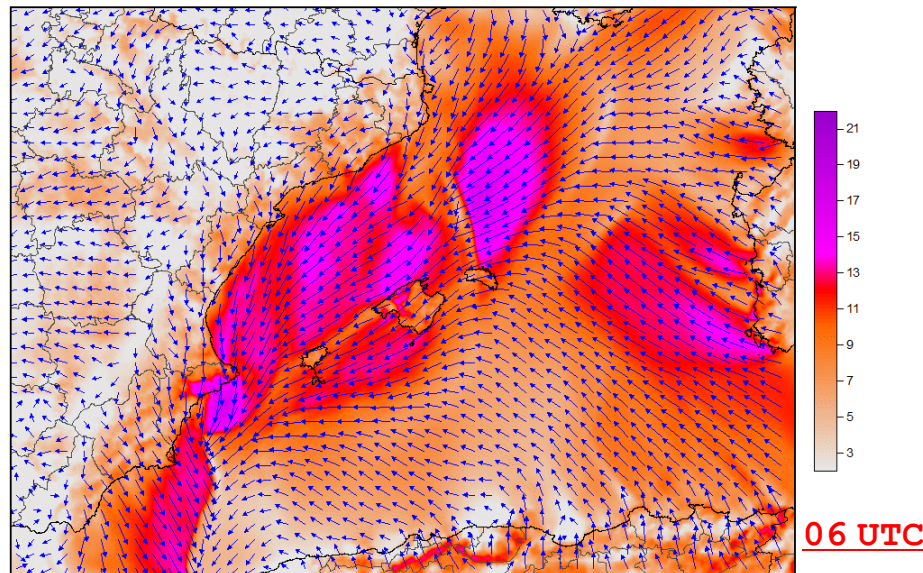


00 UTC

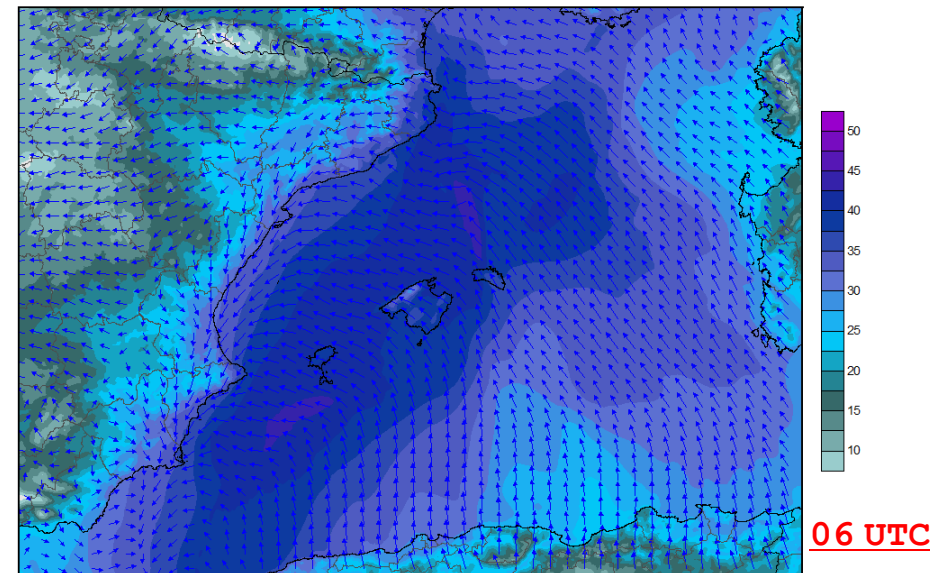
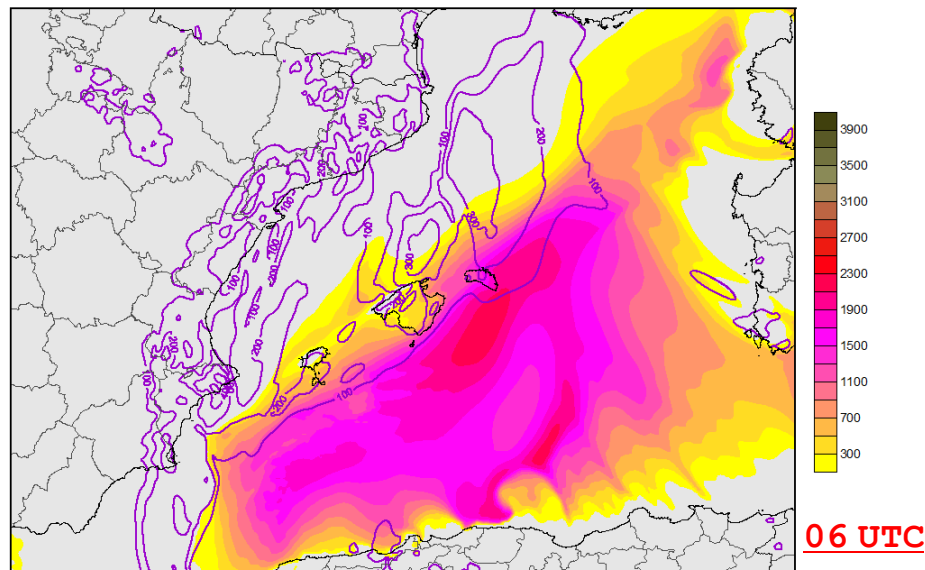


> TRAM fields 22 OCTOBER (SIMULATION TIME as INDICATED)

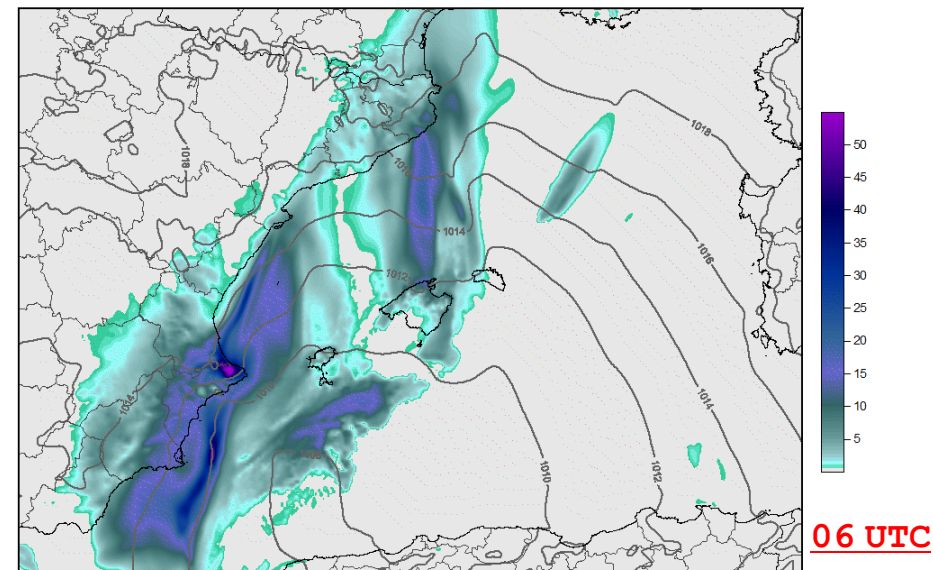
10m WIND SPEED (m/s) Forecast: 06:00h / Valid: 06:00z Tue, 22 Oct 2019



850 hPa WIND &amp; TOTAL PRECIP WATER (mm) Forecast: 06:00h / Valid: 06:00z Tue, 22 Oct 2019

STORM REL HELICITY ( $m^2/s^2$ ) & CAPE (J/kg) Forecast: 06:00h / Valid: 06:00z Tue, 22 Oct 2019

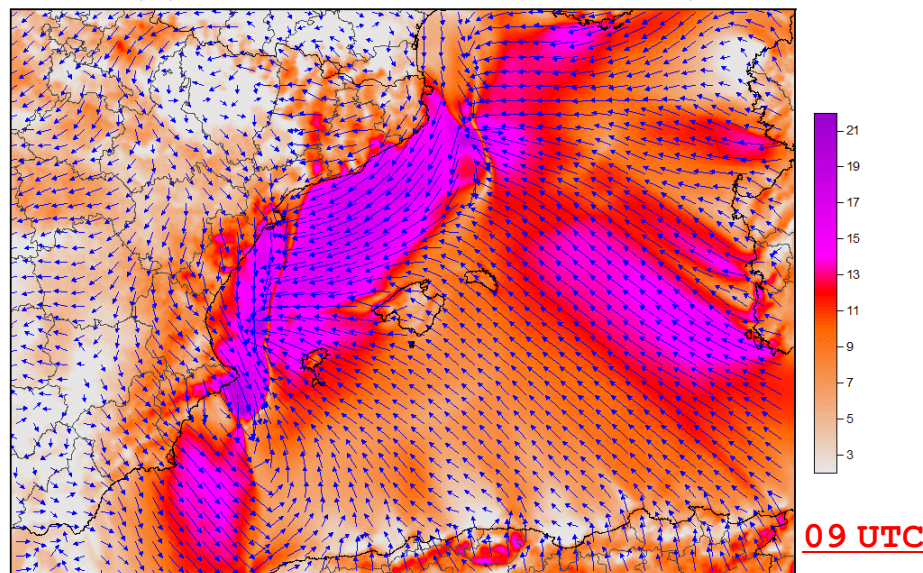
MSL PRESSURE (hPa) &amp; 3h PRECIP (mm) Forecast: 06:00h / Valid: 06:00z Tue, 22 Oct 2019



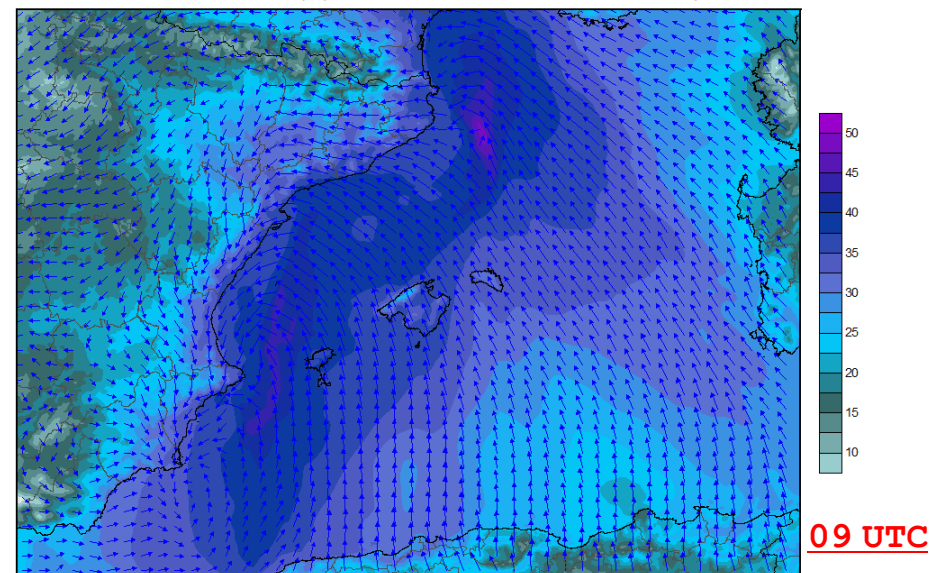
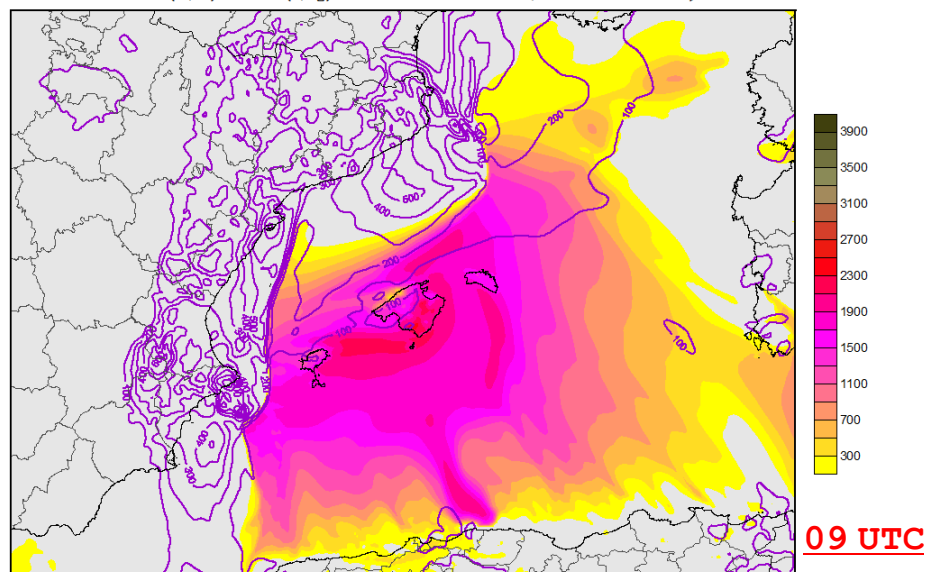


# > TRAM fields 22 OCTOBER (SIMULATION TIME as INDICATED)

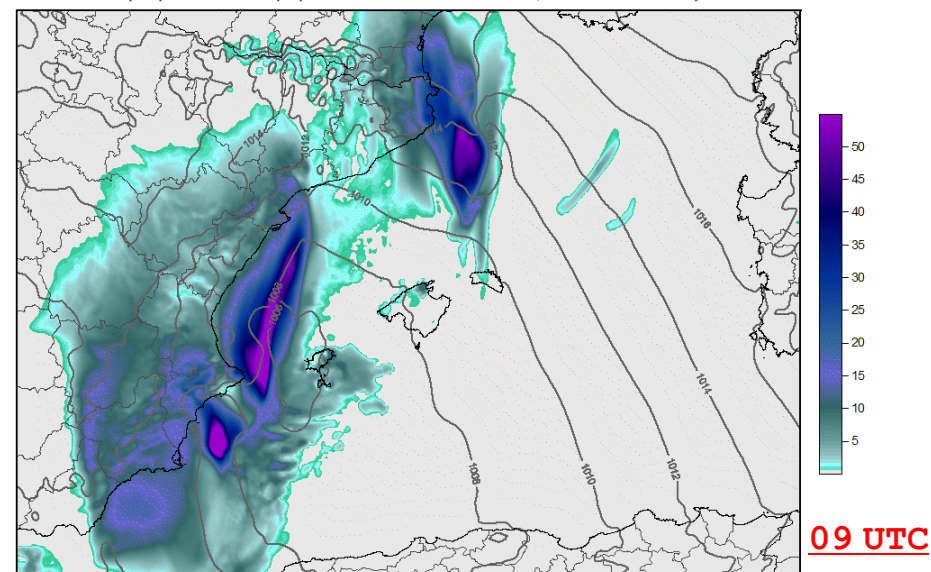
10m WIND SPEED (m/s) Forecast: 09:00h / Valid: 09:00z Tue, 22 Oct 2019



850 hPa WIND &amp; TOTAL PRECIP WATER (mm) Forecast: 09:00h / Valid: 09:00z Tue, 22 Oct 2019

STORM REL HELICITY ( $m^2/s^2$ ) & CAPE (J/kg) Forecast: 09:00h / Valid: 09:00z Tue, 22 Oct 2019

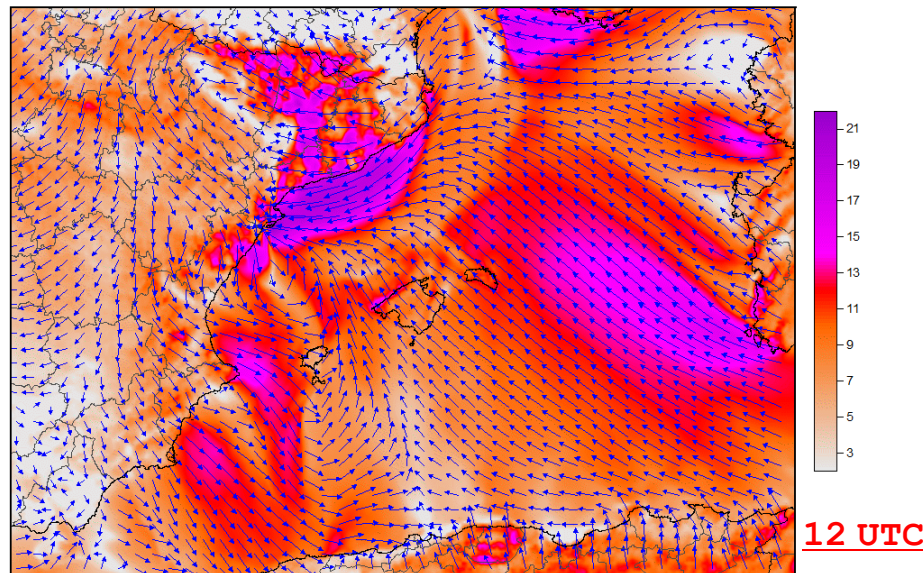
MSL PRESSURE (hPa) &amp; 3h PRECIP (mm) Forecast: 09:00h / Valid: 09:00z Tue, 22 Oct 2019



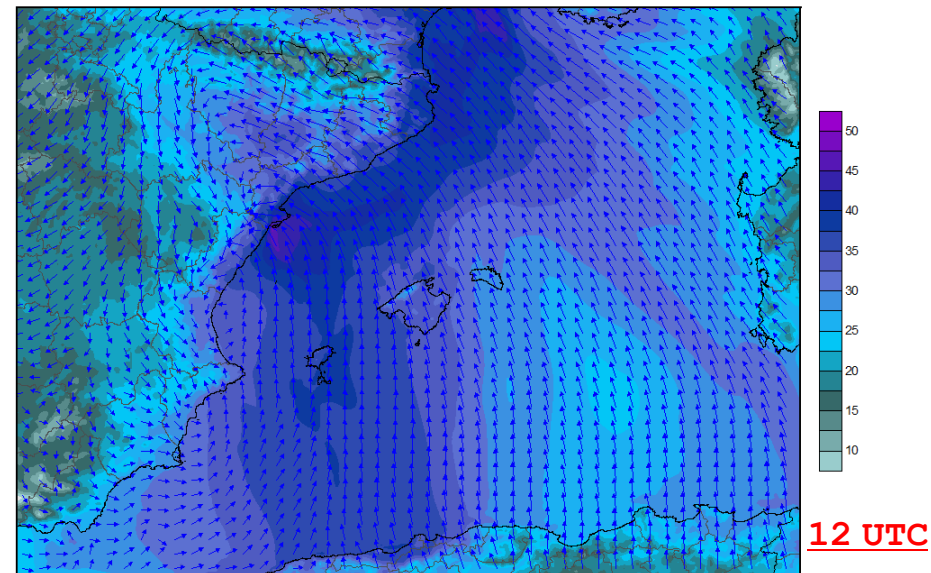
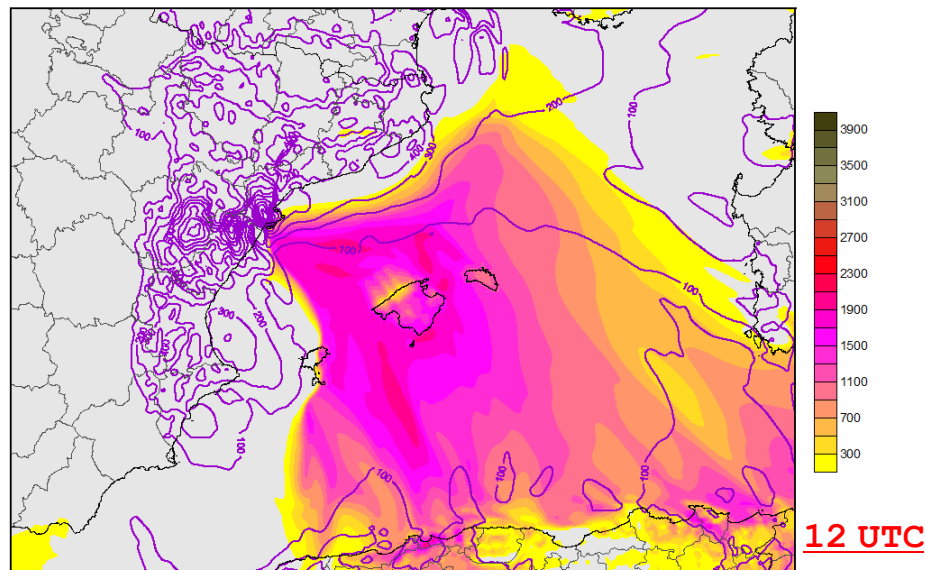


> TRAM fields 22 OCTOBER (SIMULATION TIME as INDICATED)

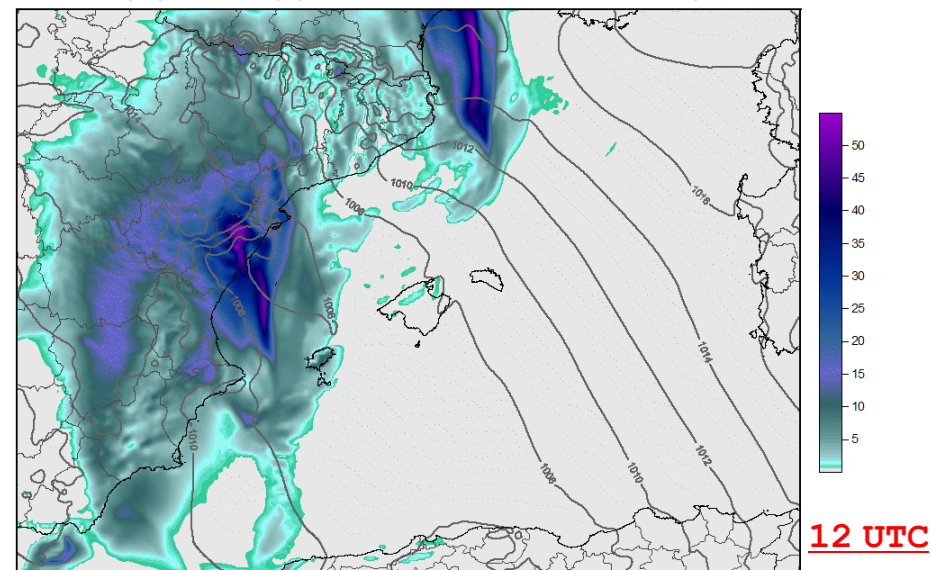
10m WIND SPEED (m/s) Forecast: 12:00h / Valid: 12:00z Tue, 22 Oct 2019



850 hPa WIND &amp; TOTAL PRECIP WATER (mm) Forecast: 12:00h / Valid: 12:00z Tue, 22 Oct 2019

STORM REL HELICITY ( $m^2/s^2$ ) & CAPE ( $J/kg$ ) Forecast: 12:00h / Valid: 12:00z Tue, 22 Oct 2019

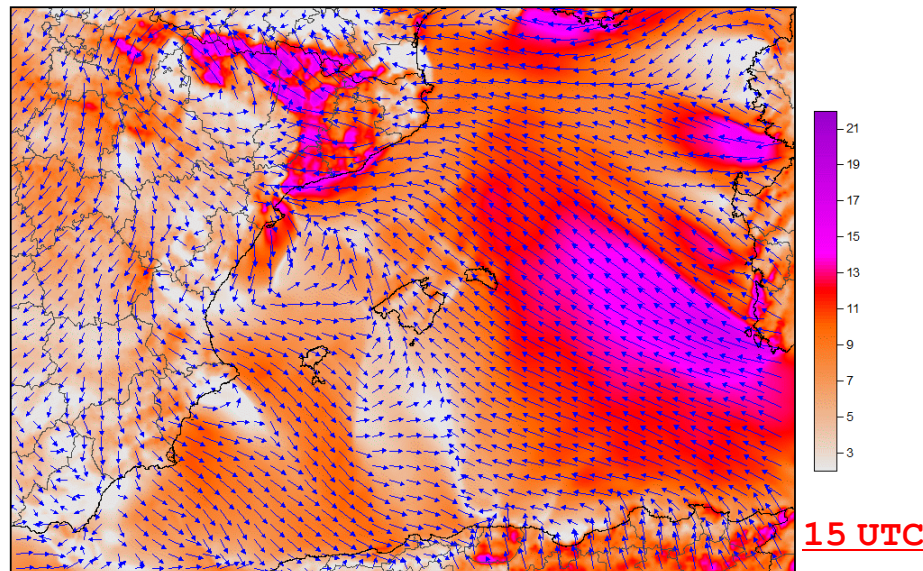
MSL PRESSURE (hPa) &amp; 3h PRECIP (mm) Forecast: 12:00h / Valid: 12:00z Tue, 22 Oct 2019



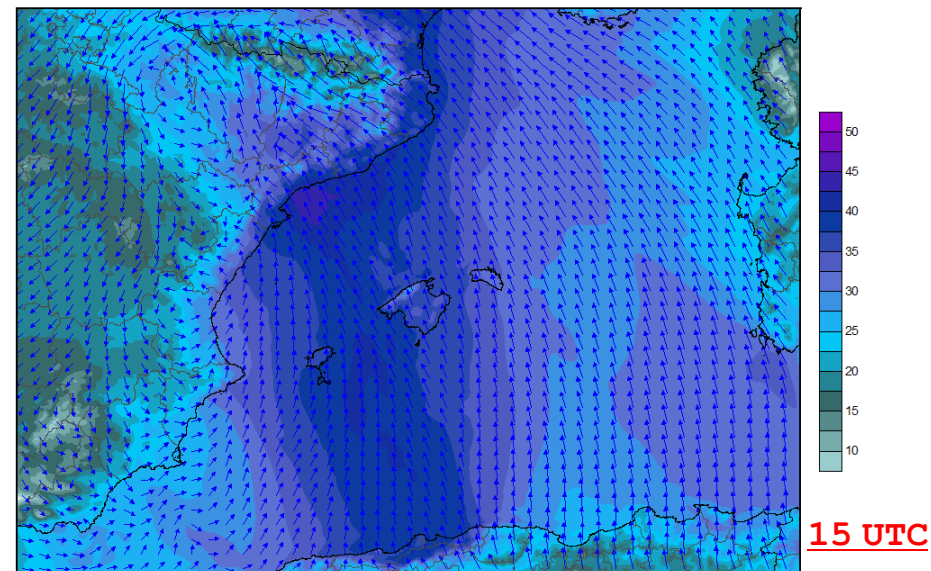
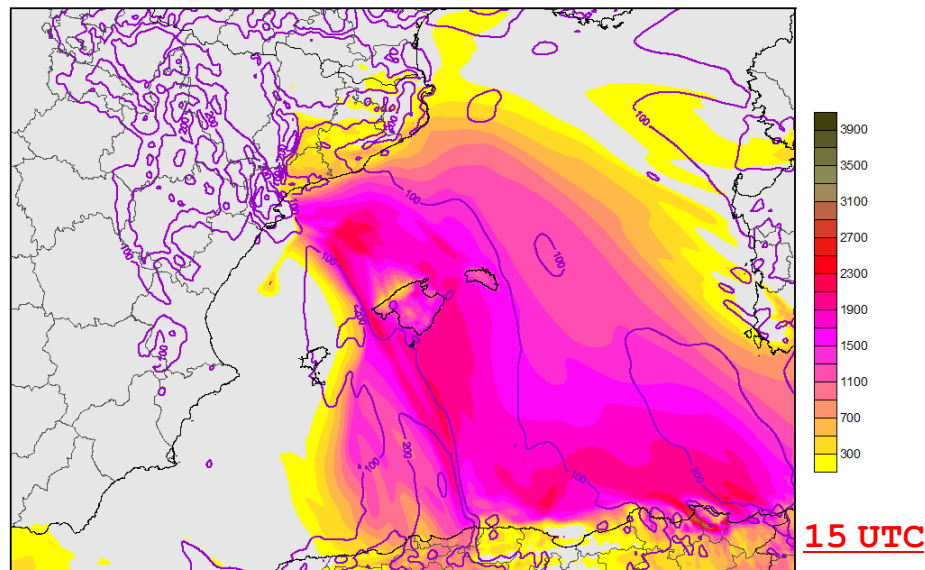


> TRAM fields 22 OCTOBER (SIMULATION TIME as INDICATED)

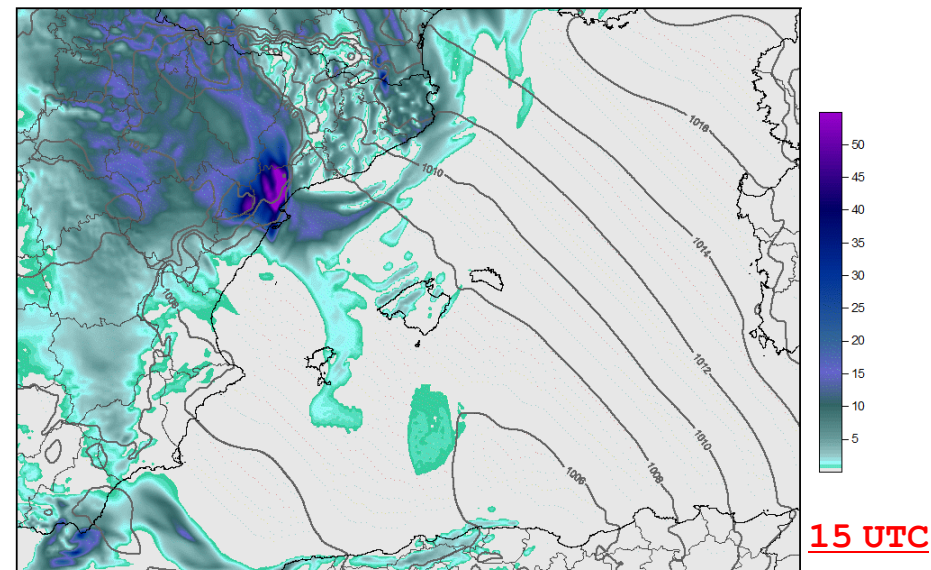
10m WIND SPEED (m/s) Forecast: 15:00h / Valid: 15:00z Tue, 22 Oct 2019



850 hPa WIND &amp; TOTAL PRECIP WATER (mm) Forecast: 15:00h / Valid: 15:00z Tue, 22 Oct 2019

STORM REL HELICITY ( $m^2/s^2$ ) & CAPE (J/kg) Forecast: 15:00h / Valid: 15:00z Tue, 22 Oct 2019

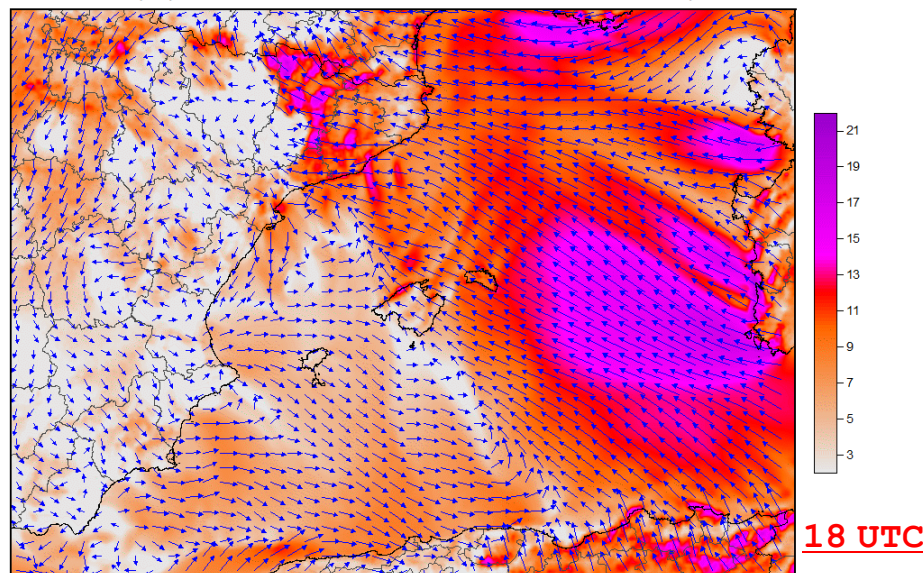
MSL PRESSURE (hPa) &amp; 3h PRECIP (mm) Forecast: 15:00h / Valid: 15:00z Tue, 22 Oct 2019



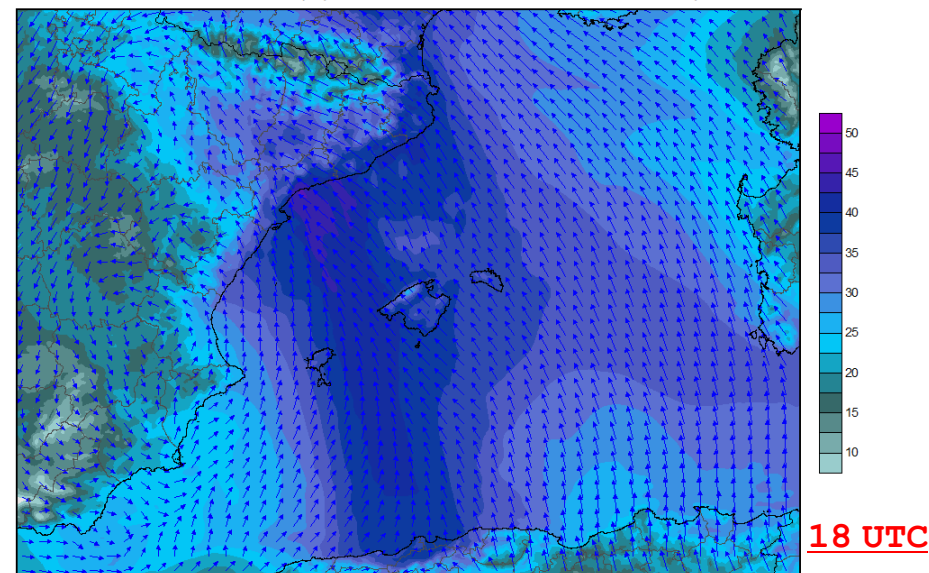
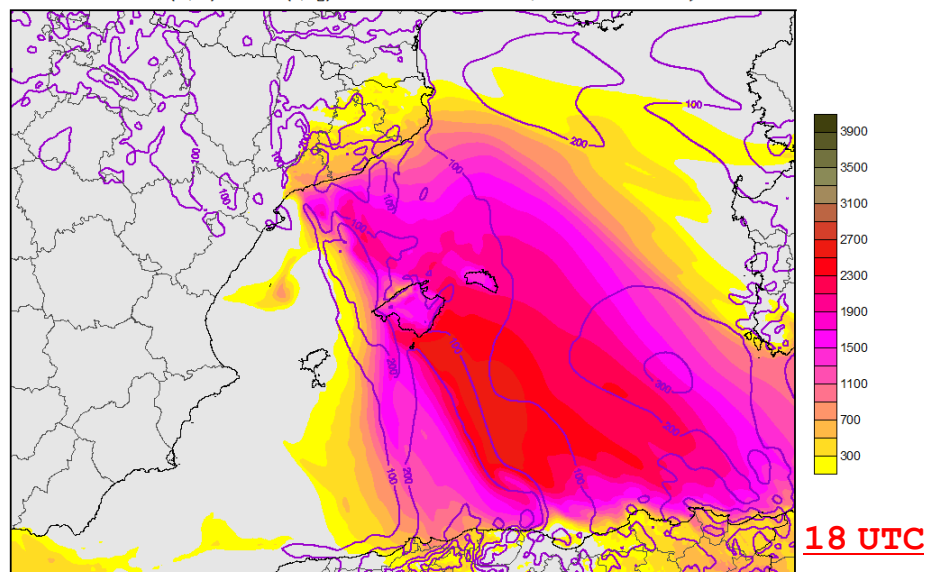


> TRAM fields 22 OCTOBER (SIMULATION TIME as INDICATED)

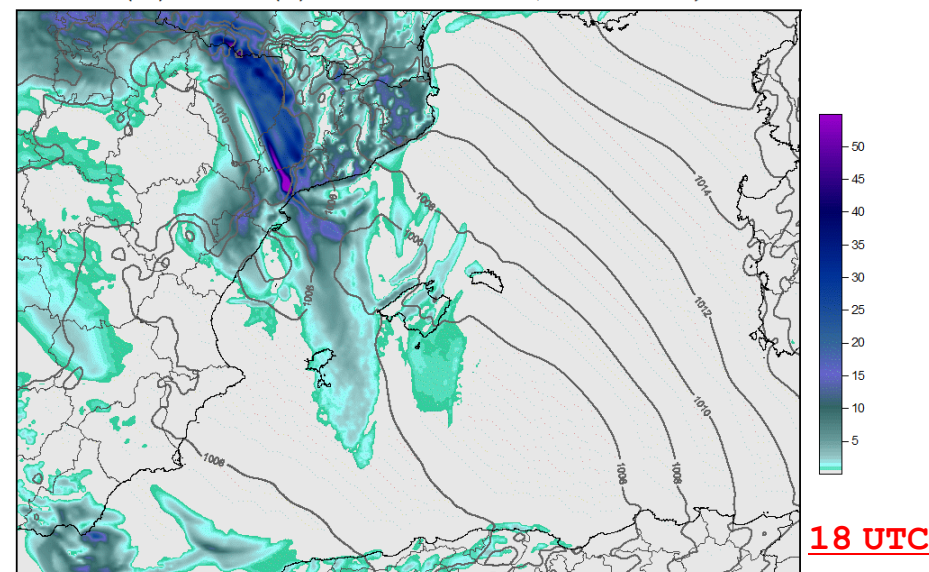
10m WIND SPEED (m/s) Forecast: 18:00h / Valid: 18:00z Tue, 22 Oct 2019



850 hPa WIND &amp; TOTAL PRECIP WATER (mm) Forecast: 18:00h / Valid: 18:00z Tue, 22 Oct 2019

STORM REL HELICITY ( $m^2/s^2$ ) & CAPE (J/kg) Forecast: 18:00h / Valid: 18:00z Tue, 22 Oct 2019

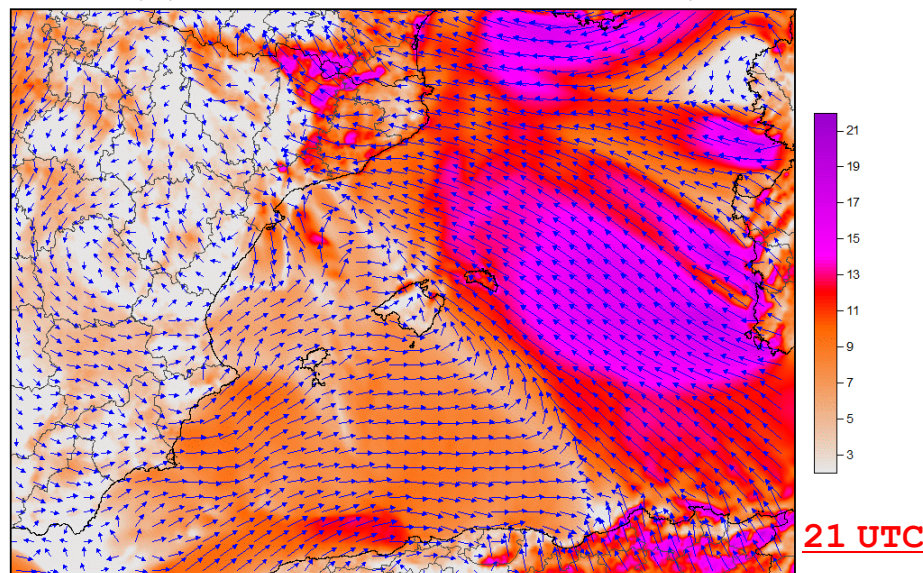
MSL PRESSURE (hPa) &amp; 3h PRECIP (mm) Forecast: 18:00h / Valid: 18:00z Tue, 22 Oct 2019



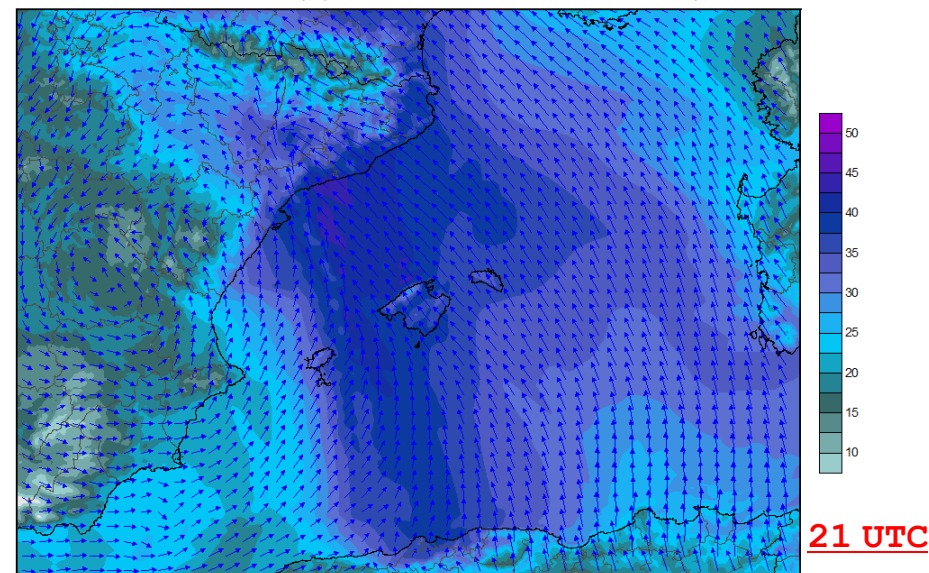
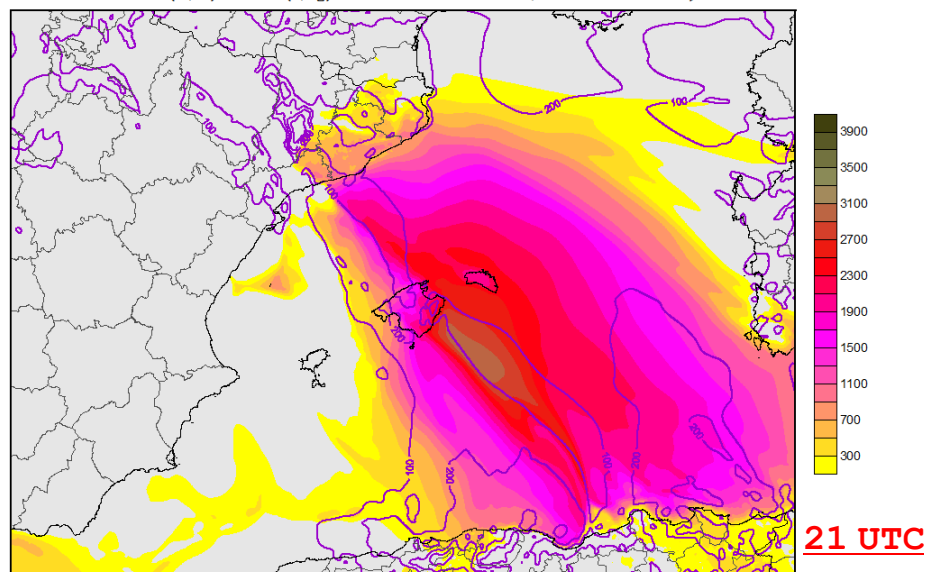


> TRAM fields 22 OCTOBER (SIMULATION TIME as INDICATED)

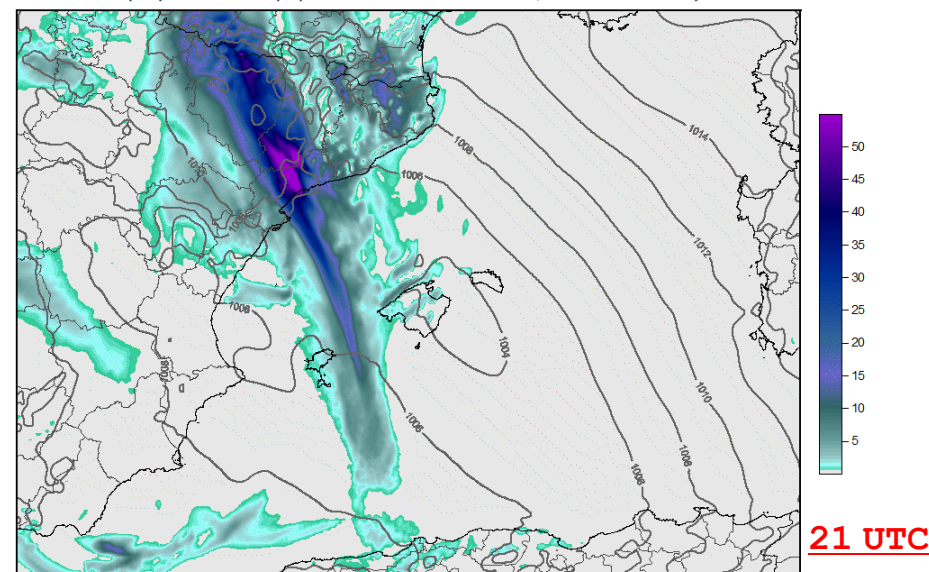
10m WIND SPEED (m/s) Forecast: 21:00h / Valid: 21:00z Tue, 22 Oct 2019



850 hPa WIND &amp; TOTAL PRECIP WATER (mm) Forecast: 21:00h / Valid: 21:00z Tue, 22 Oct 2019

STORM REL HELICITY ( $m^2/s^2$ ) & CAPE (J/kg) Forecast: 21:00h / Valid: 21:00z Tue, 22 Oct 2019

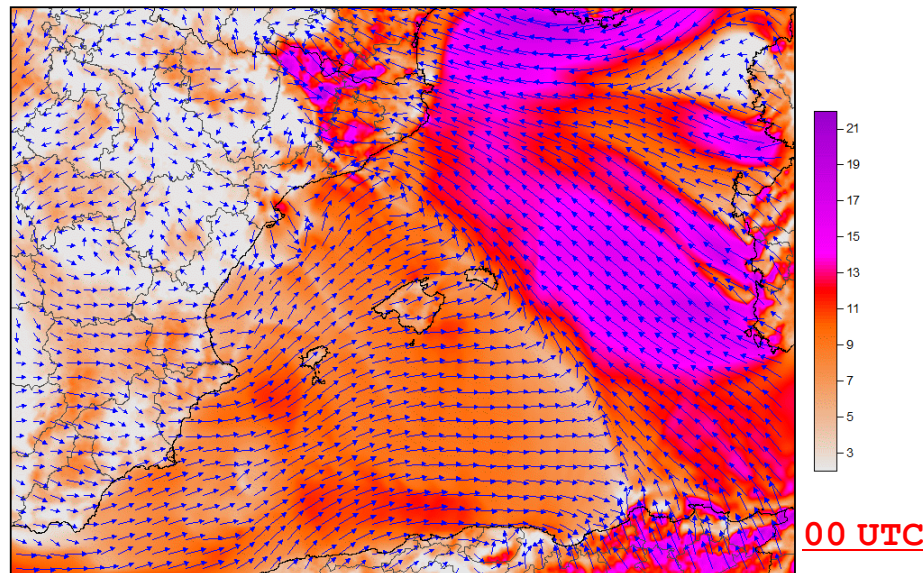
MSL PRESSURE (hPa) &amp; 3h PRECIP (mm) Forecast: 21:00h / Valid: 21:00z Tue, 22 Oct 2019



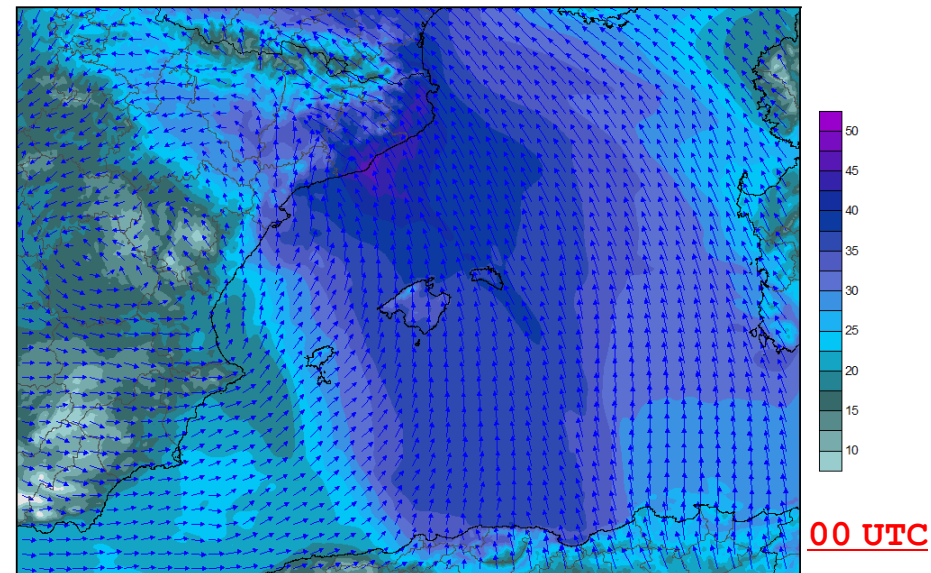
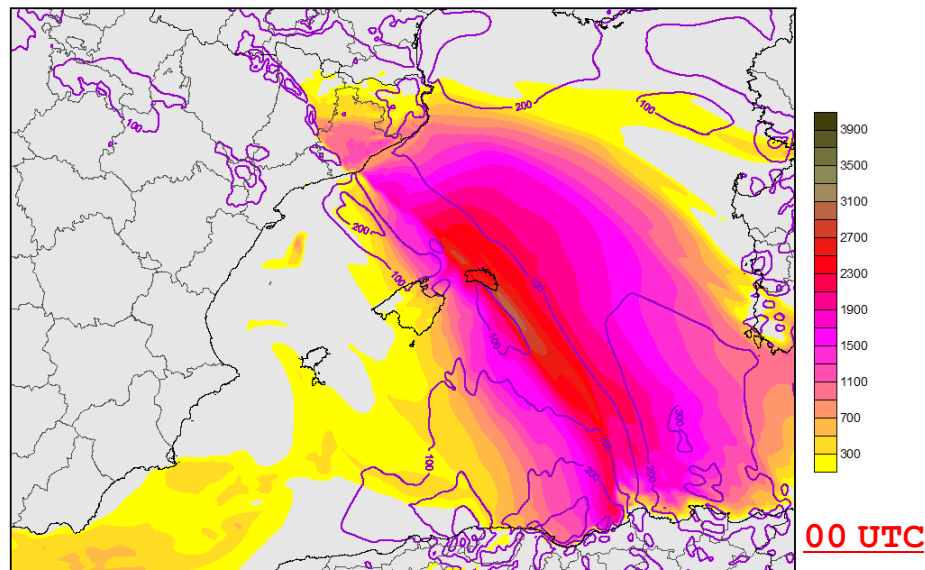


> TRAM fields 23 OCTOBER (SIMULATION TIME as INDICATED)

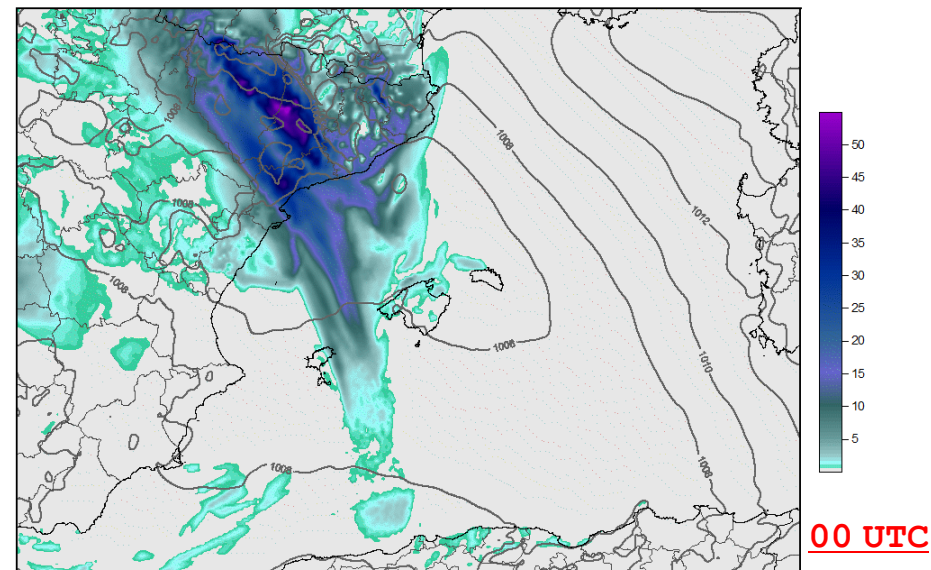
10m WIND SPEED (m/s) Forecast: 24:00h / Valid: 00:00z Wed, 23 Oct 2019



850 hPa WIND &amp; TOTAL PRECIP WATER (mm) Forecast: 24:00h / Valid: 00:00z Wed, 23 Oct 2019

STORM REL HELICITY ( $m^2/s^2$ ) & CAPE ( $J/kg$ ) Forecast: 24:00h / Valid: 00:00z Wed, 23 Oct 2019

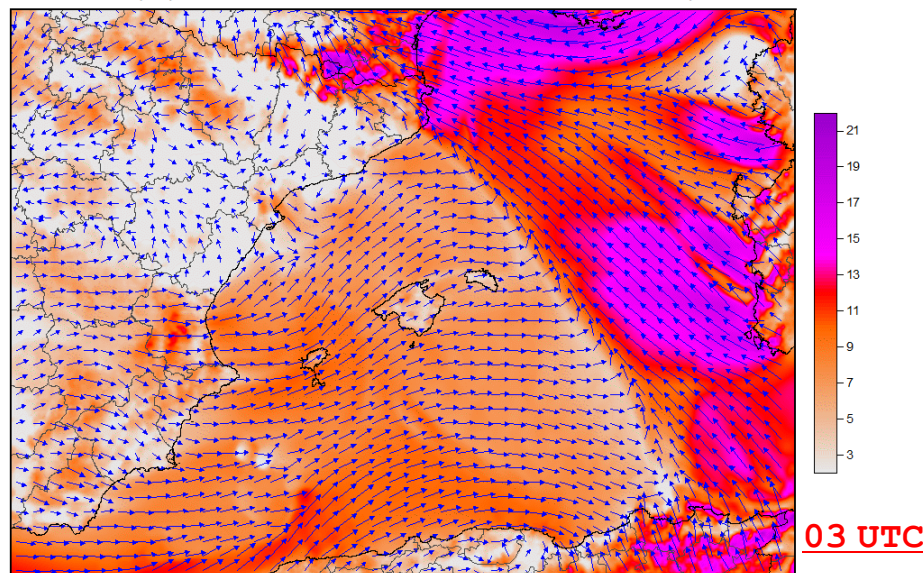
MSL PRESSURE (hPa) &amp; 3h PRECIP (mm) Forecast: 24:00h / Valid: 00:00z Wed, 23 Oct 2019



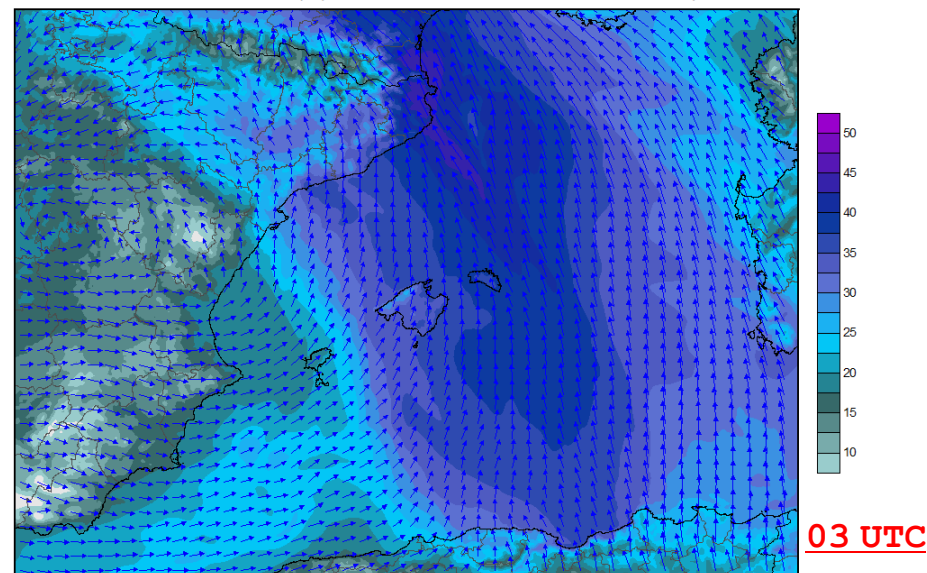
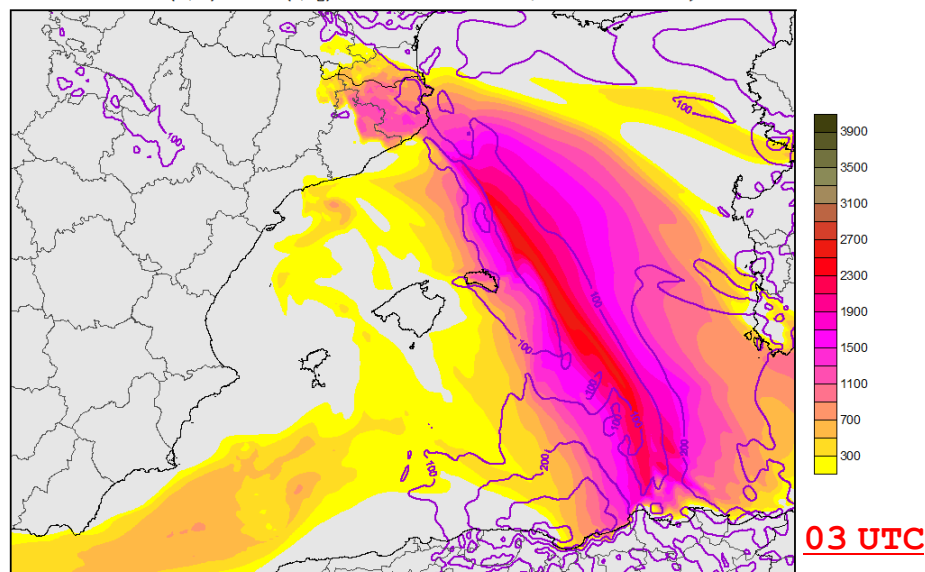


> TRAM fields 23 OCTOBER (SIMULATION TIME as INDICATED)

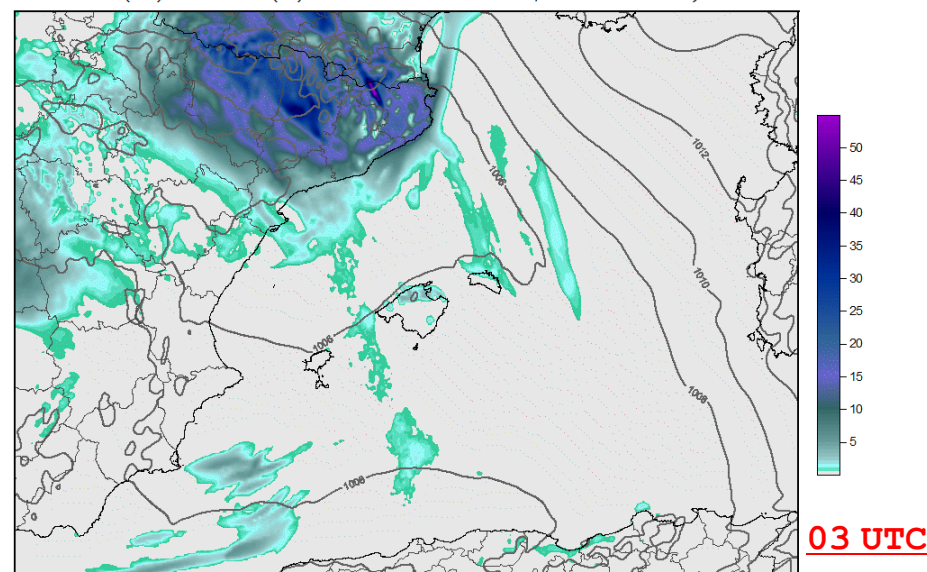
10m WIND SPEED (m/s) Forecast: 27:00h / Valid: 03:00z Wed, 23 Oct 2019



850 hPa WIND &amp; TOTAL PRECIP WATER (mm) Forecast: 27:00h / Valid: 03:00z Wed, 23 Oct 2019

STORM REL HELICITY ( $m^2/s^2$ ) & CAPE (J/kg) Forecast: 27:00h / Valid: 03:00z Wed, 23 Oct 2019

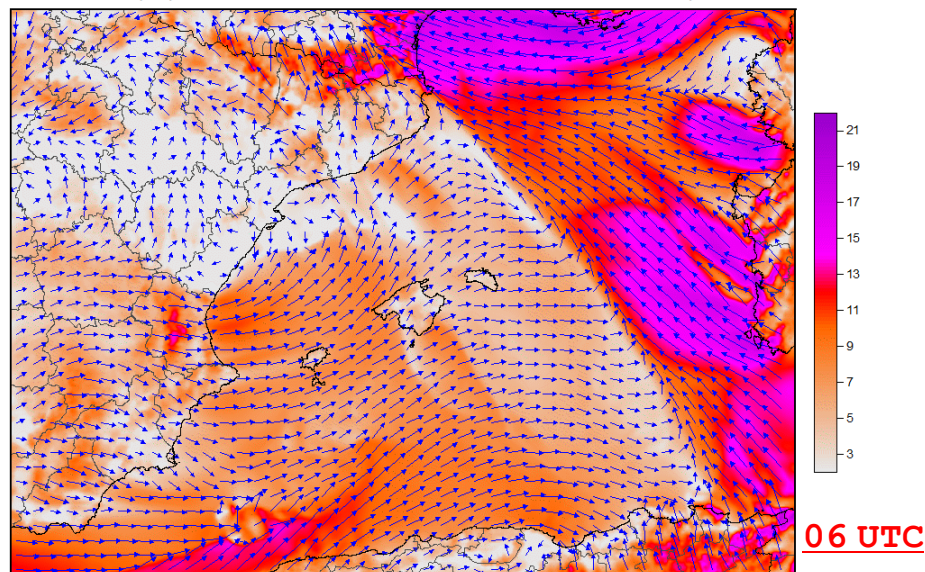
MSL PRESSURE (hPa) &amp; 3h PRECIP (mm) Forecast: 27:00h / Valid: 03:00z Wed, 23 Oct 2019



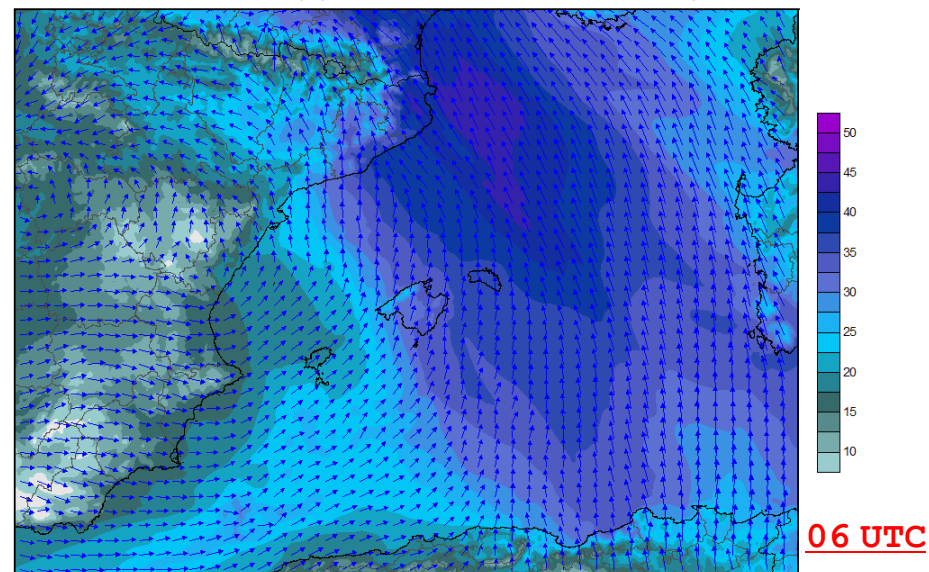
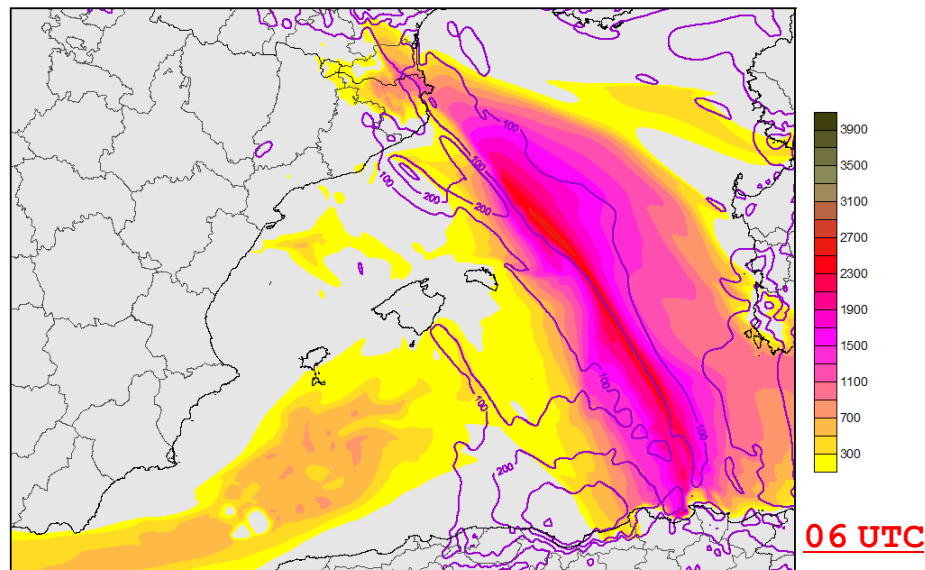


> TRAM fields 23 OCTOBER (SIMULATION TIME as INDICATED)

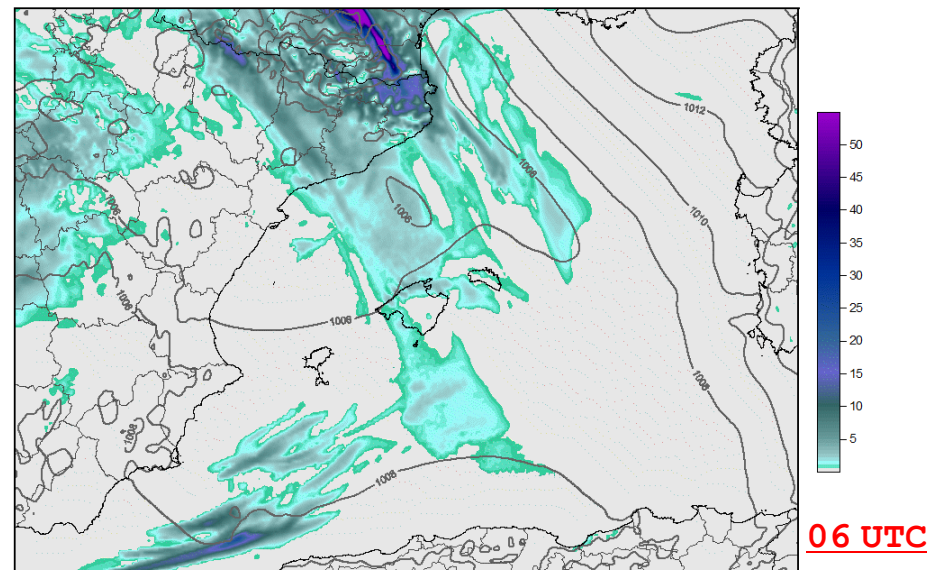
10m WIND SPEED (m/s) Forecast: 30:00h / Valid: 06:00z Wed, 23 Oct 2019



850 hPa WIND &amp; TOTAL PRECIP WATER (mm) Forecast: 30:00h / Valid: 06:00z Wed, 23 Oct 2019

STORM REL HELICITY ( $m^2/s^2$ ) & CAPE (J/kg) Forecast: 30:00h / Valid: 06:00z Wed, 23 Oct 2019

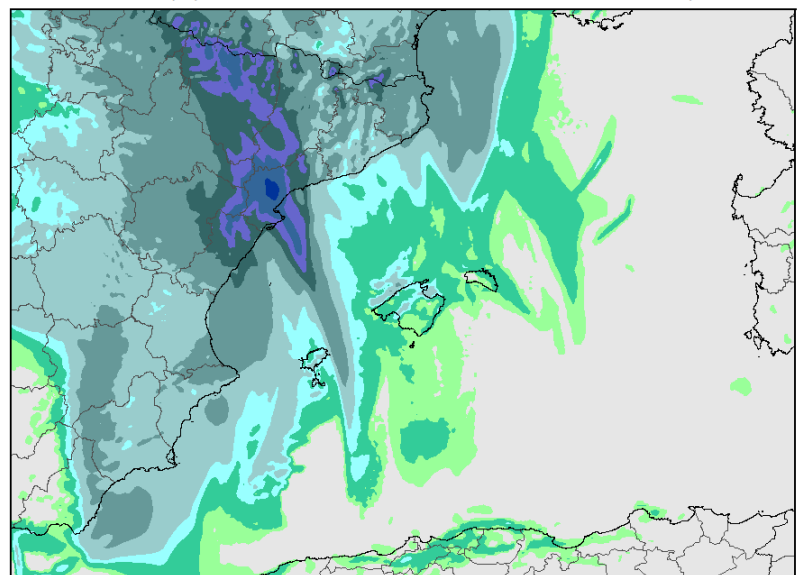
MSL PRESSURE (hPa) &amp; 3h PRECIP (mm) Forecast: 30:00h / Valid: 06:00z Wed, 23 Oct 2019



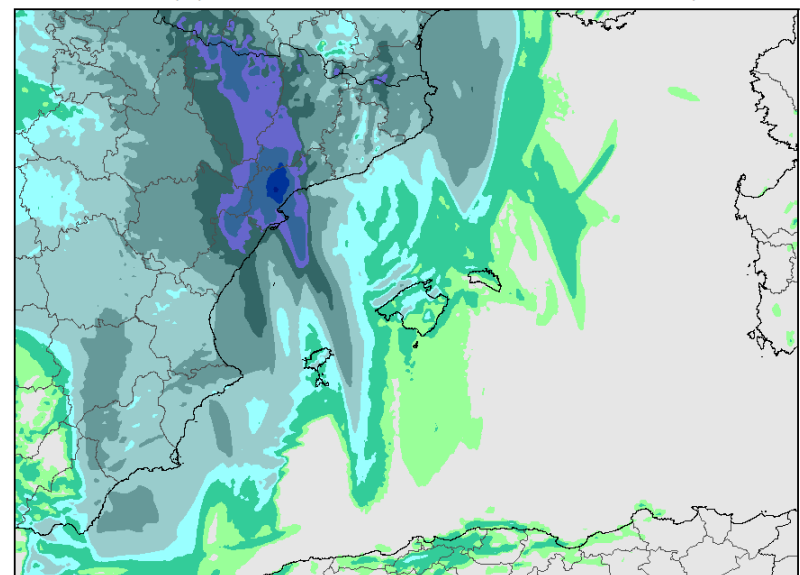


> 22/06-23/06 **24h PRECIP** (START TIME is 22/00)

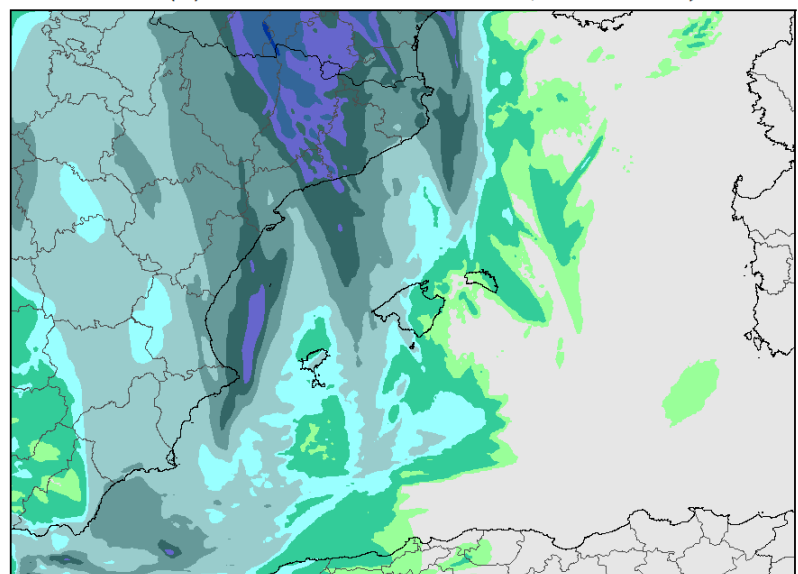
TOTAL ACCUM PRECIP (mm) Forecast: 24:00h / Valid: 06:00z Wed, 23 Oct 2019



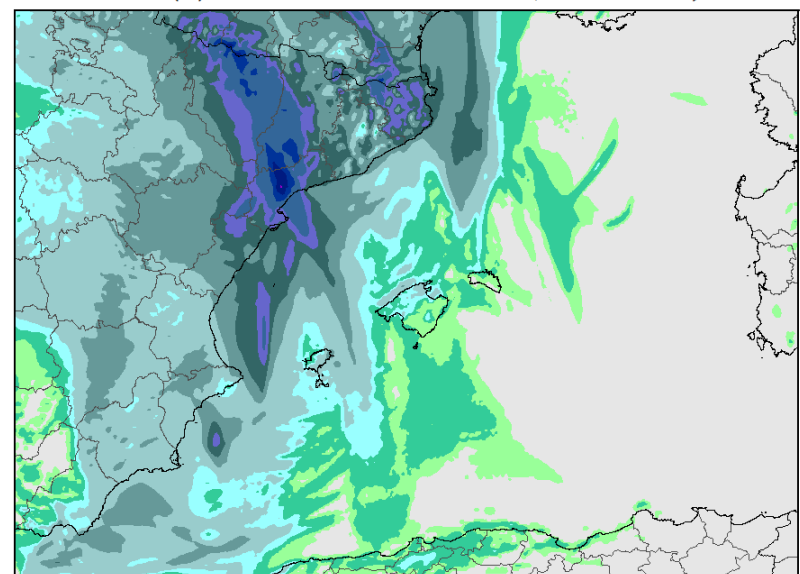
TOTAL ACCUM PRECIP (mm) Forecast: 24:00h / Valid: 06:00z Wed, 23 Oct 2019



TOTAL ACCUM PRECIP (mm) Forecast: 24:00h / Valid: 06:00z Wed, 23 Oct 2019

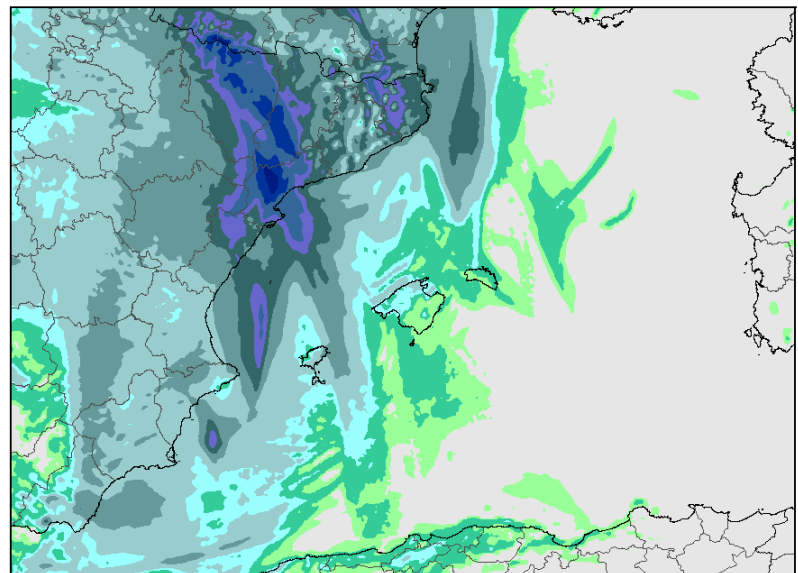


TOTAL ACCUM PRECIP (mm) Forecast: 24:00h / Valid: 06:00z Wed, 23 Oct 2019

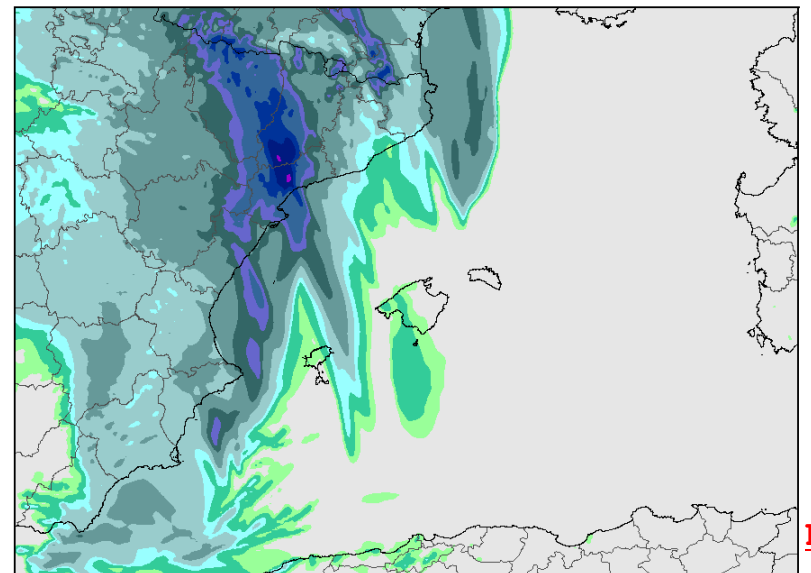


> 22/06-23/06 **24h PRECIP** (START TIME is 22/00)

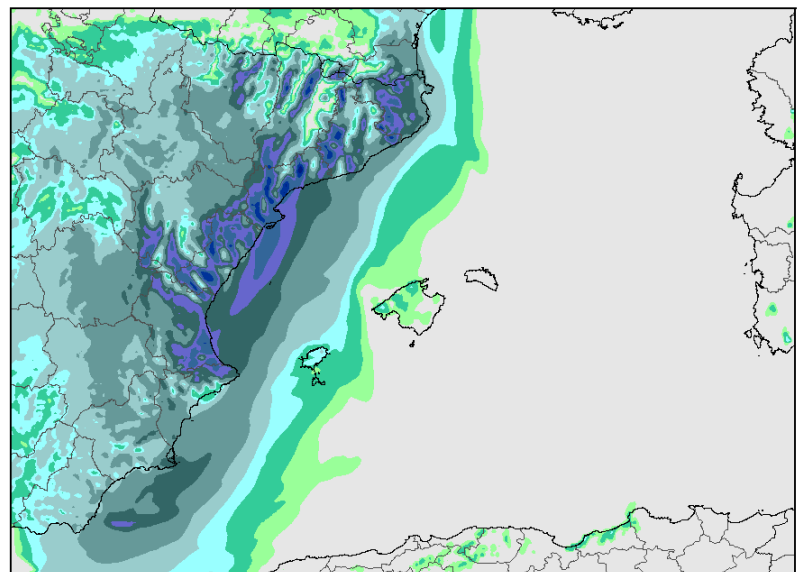
TOTAL ACCUM PRECIP (mm) Forecast: 24:00h / Valid: 06:00z Wed, 23 Oct 2019



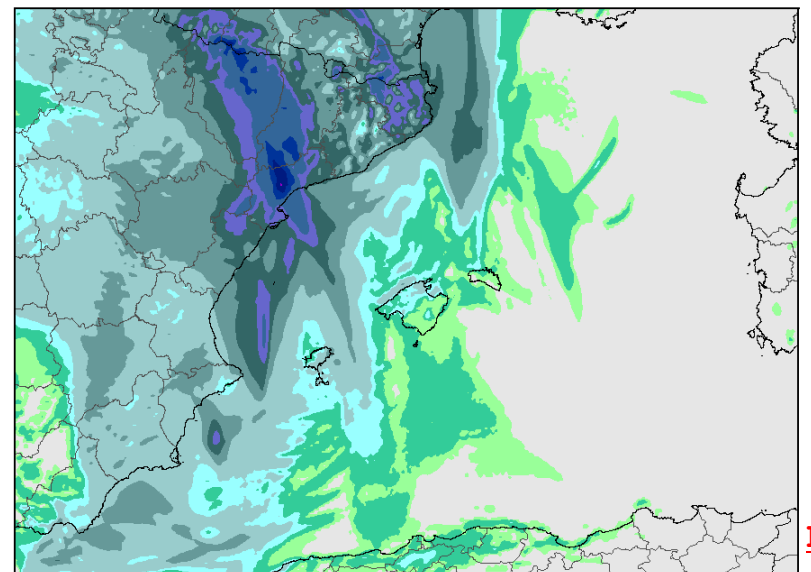
TOTAL ACCUM PRECIP (mm) Forecast: 24:00h / Valid: 06:00z Wed, 23 Oct 2019



TOTAL ACCUM PRECIP (mm) Forecast: 24:00h / Valid: 06:00z Wed, 23 Oct 2019

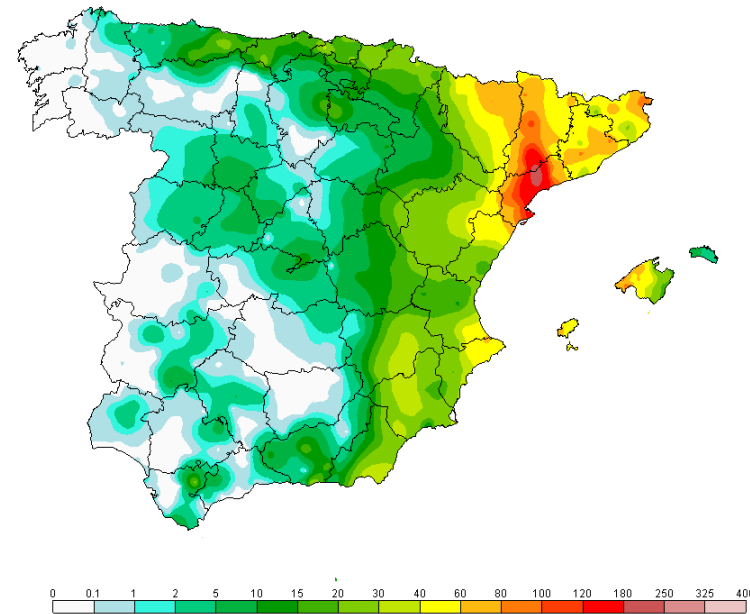


TOTAL ACCUM PRECIP (mm) Forecast: 24:00h / Valid: 06:00z Wed, 23 Oct 2019





> 22/00-24/00 **48h PRECIP** (START TIME is 22/00)



TOTAL ACCUM PRECIP (mm) Forecast: 48:00h / Valid: 00:00z Thu, 24 Oct 2019

