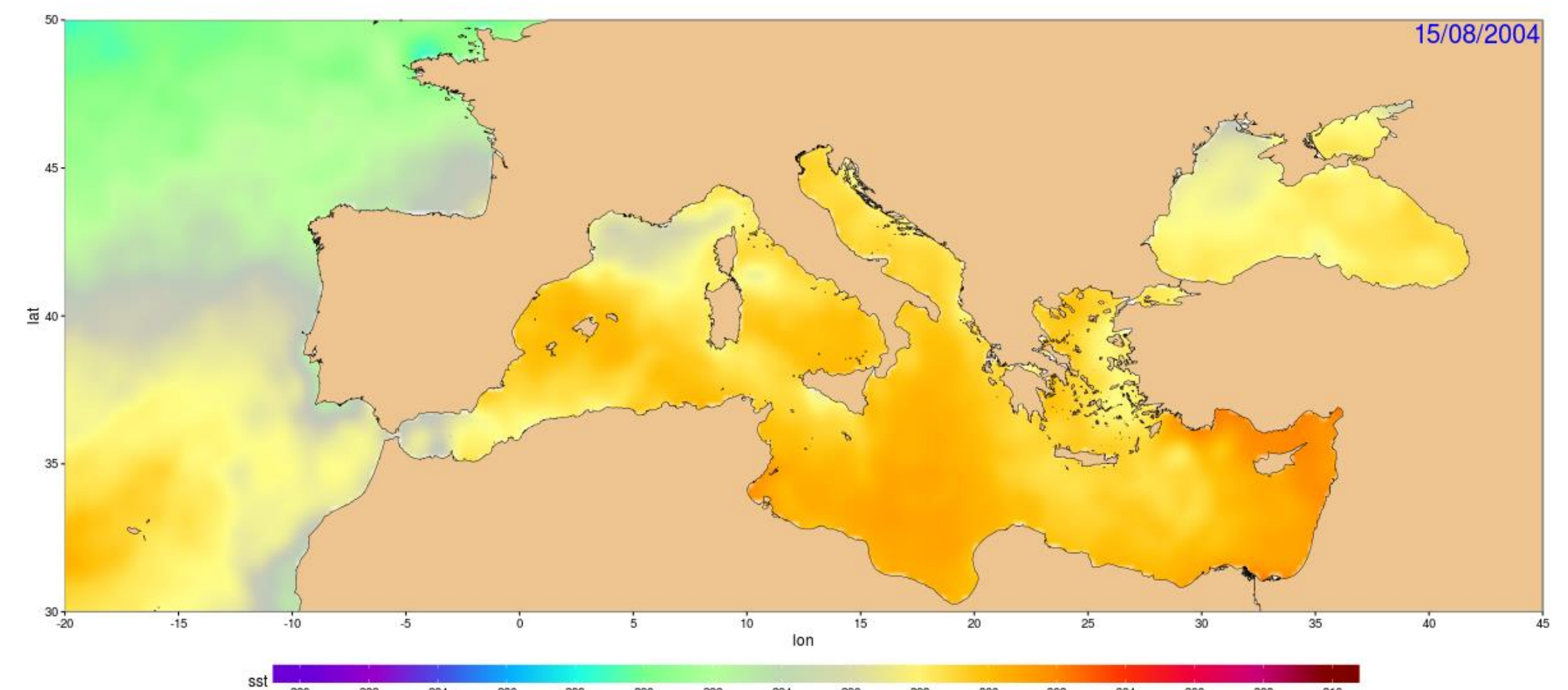
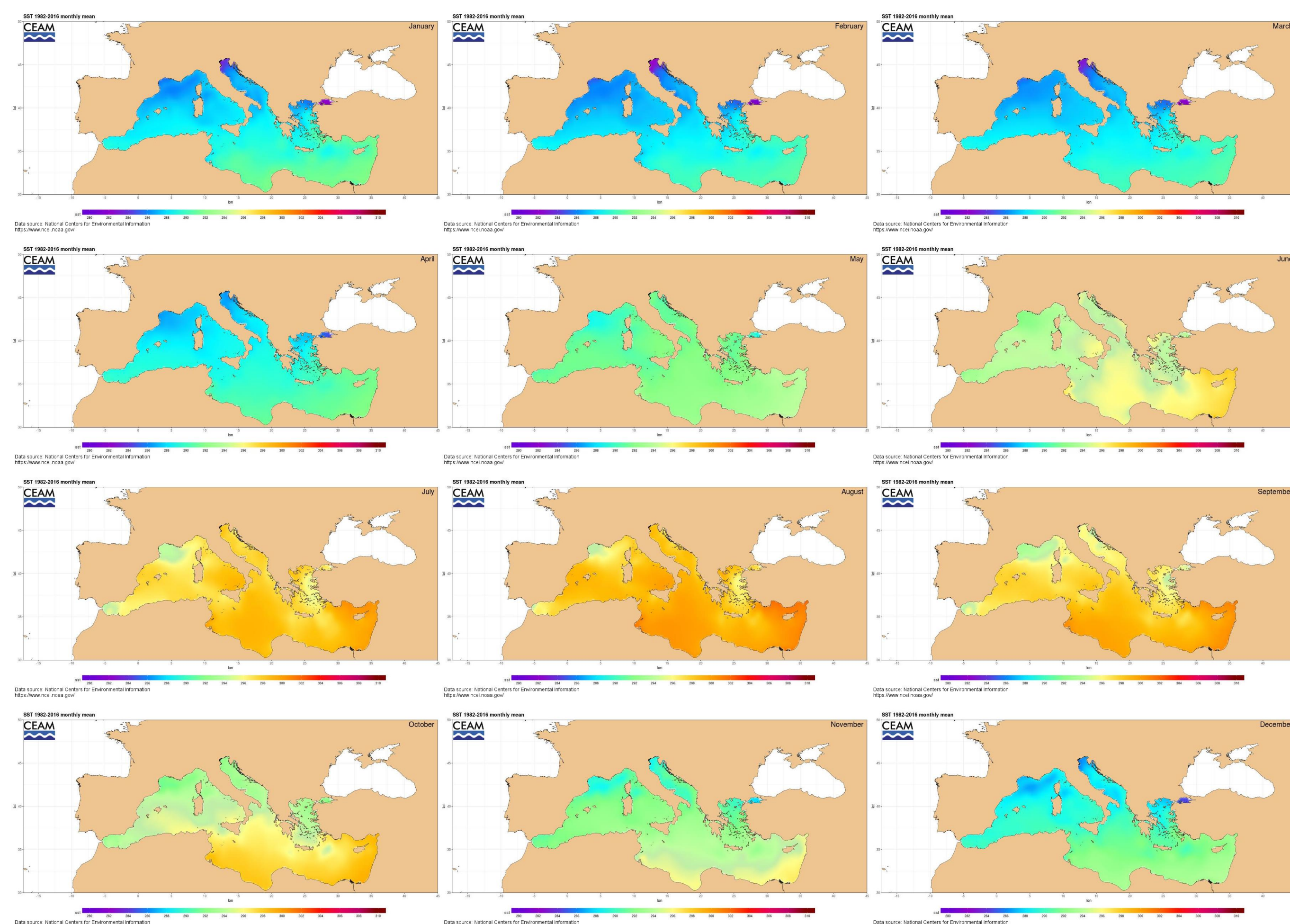


Sea surface temperature daily: data and analysis description

- SST data used in this study is organized in a global coverage field with 0.25 degree spatial resolution, ranging from 1982 to 2016
- In the Mediterranean region there are 4248 SST grid points for 12784 days
- A monthly climatology was built and spatial patterns were investigated with clustering techniques
- SST daily data series were decomposed in their seasonal, trend and remainder components
- Daily, monthly, seasonal and decadal trends were analysed for the seasonally adjusted SST



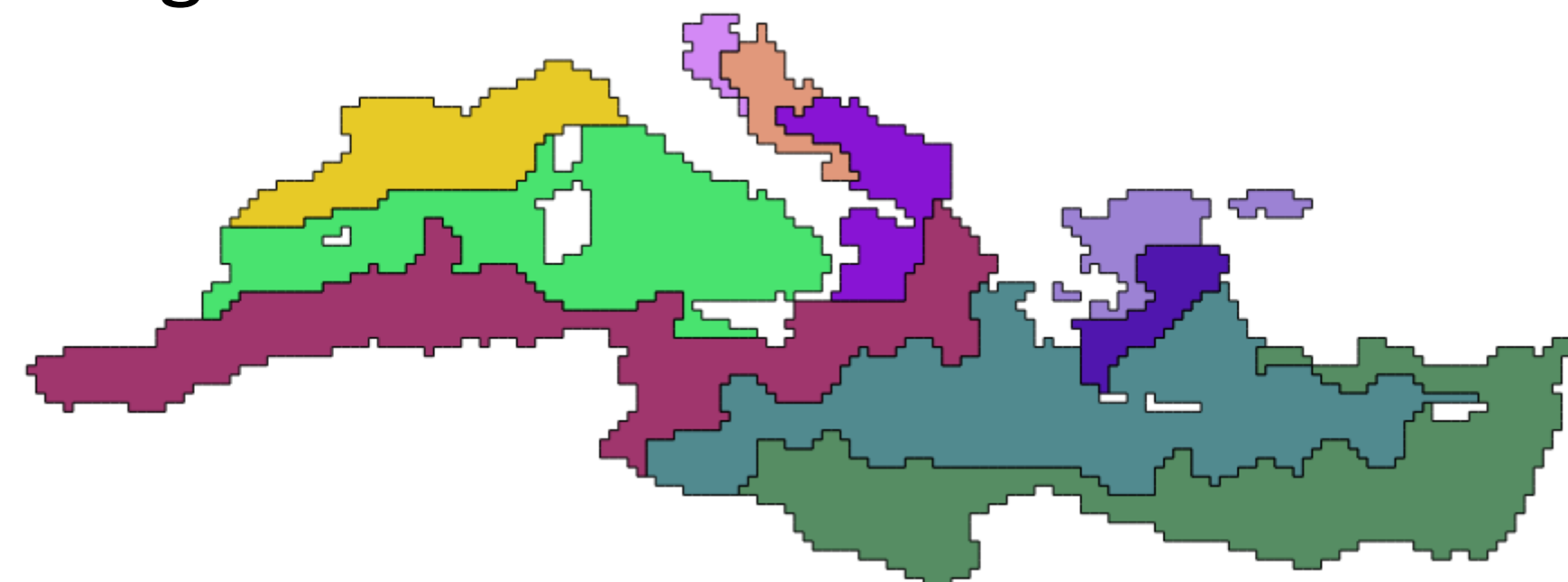
SST monthly climatology



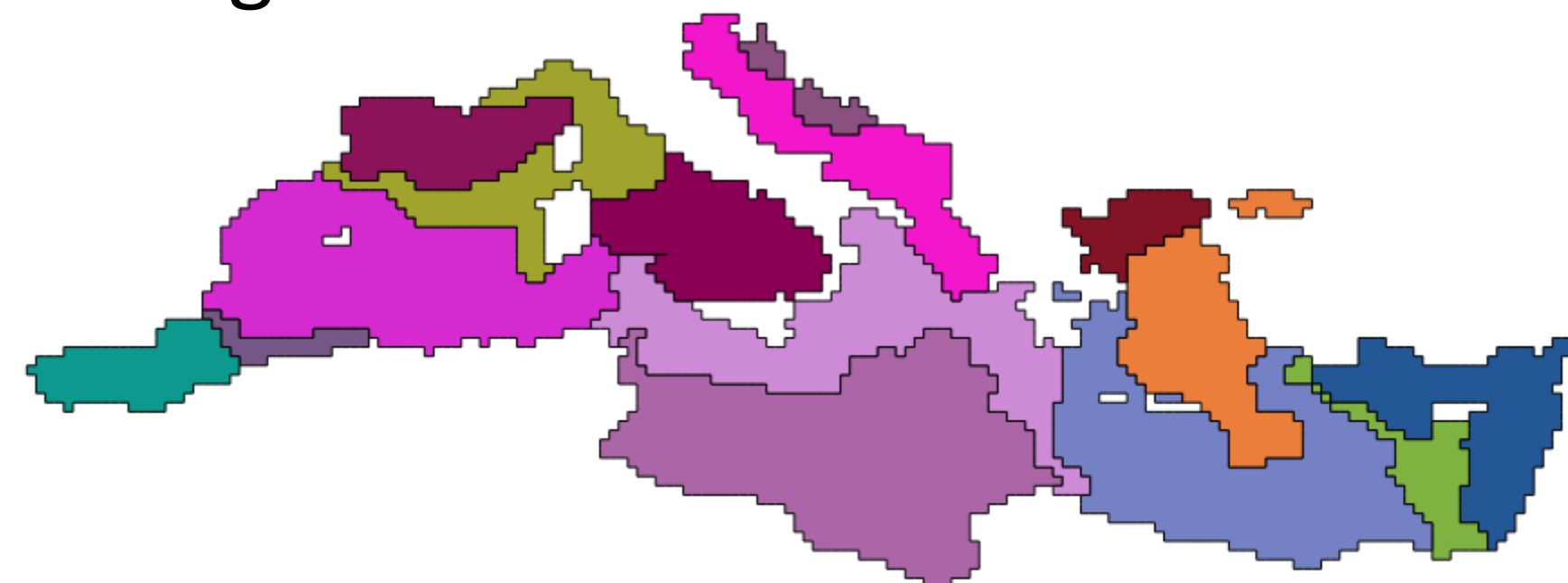
SST distribution patterns



Winter regime

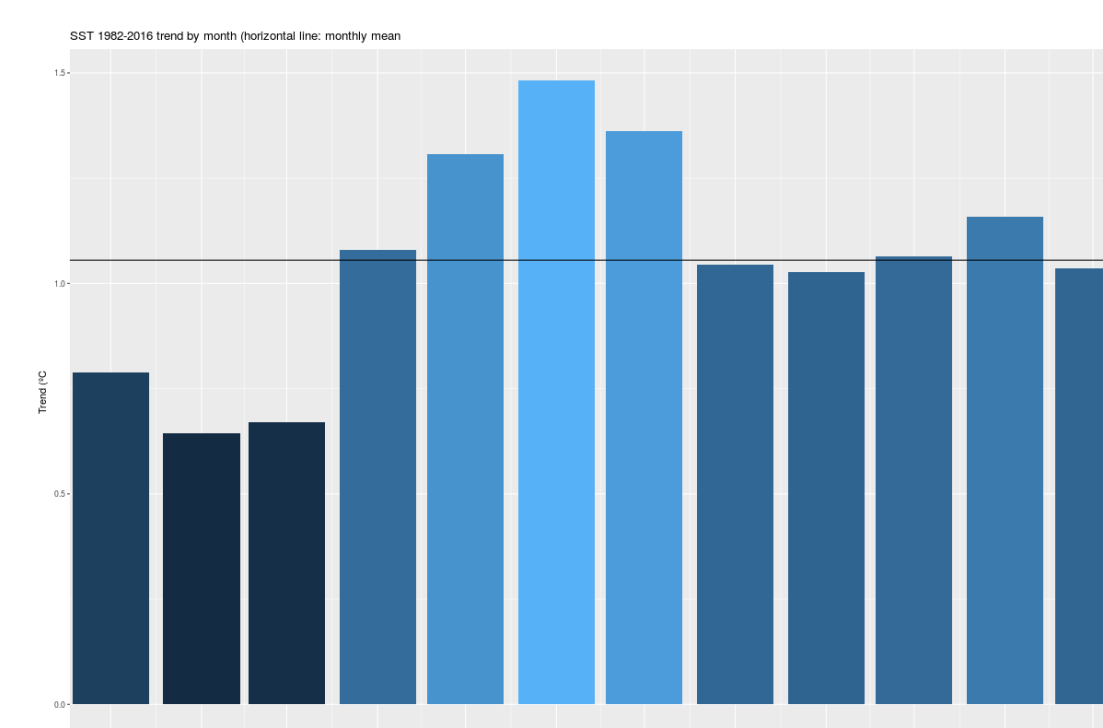
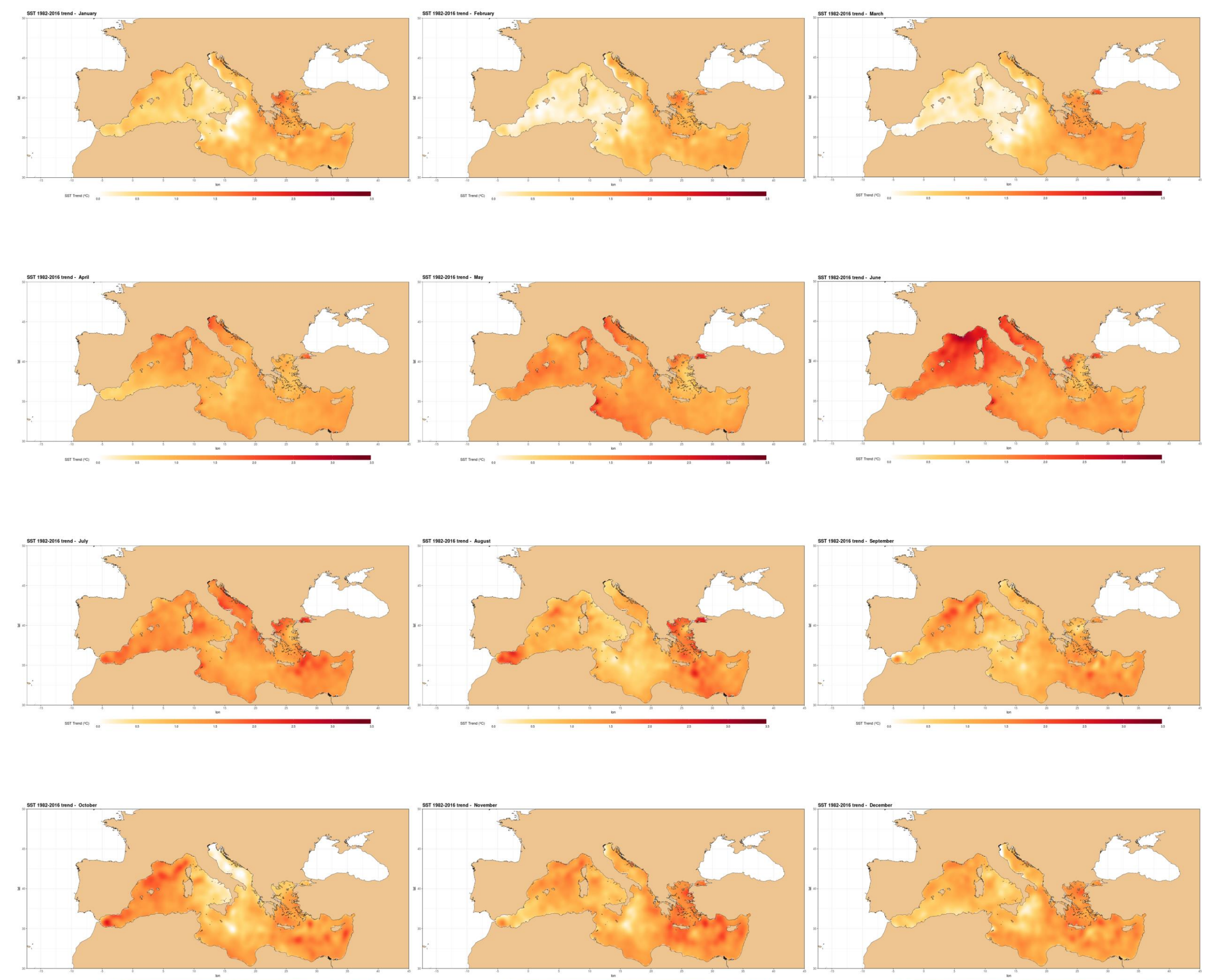


Summer regime



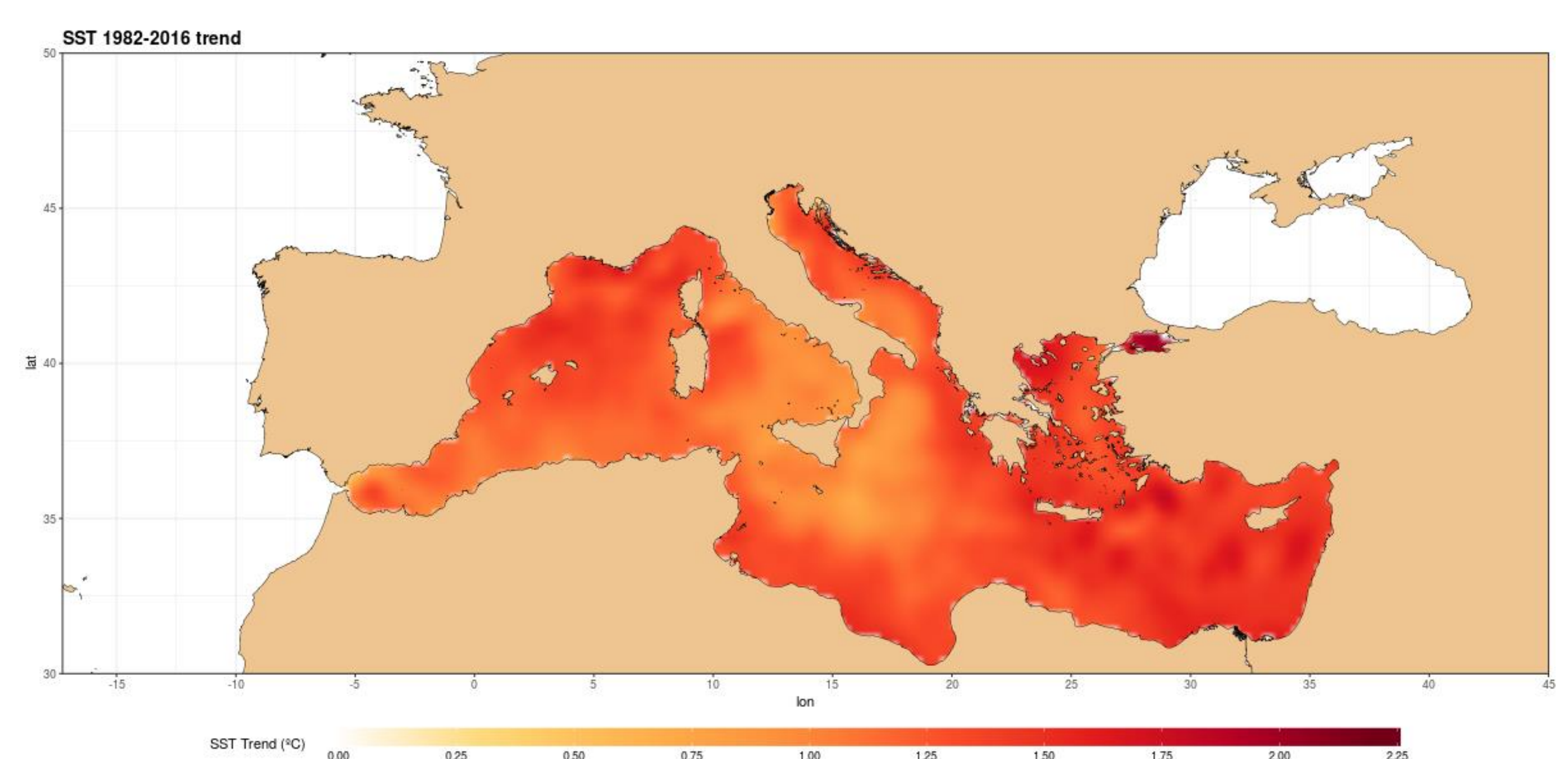
- Winter SST distribution is characterized by a north-to-south banded structure, corresponding to an increasing SST gradient
- Summer SST distribution does not show a simple gradient structure but a set of distinct, well-differentiated, areas with the highest SST to the southeast
- Spring and fall show transitional regimes

SST monthly trend



There is a clear seasonal signal in the SST warming trend. The higher monthly warming rates are found from May to July while the lower run for the winter months, January to March.

SST total increase 1982-2016



Data	Period	Trend	
Daily (full series)	1982-2016	$9.93 \cdot 10^{-5} \text{ }^{\circ}\text{C/day}$	$0.036 \text{ }^{\circ}\text{C/year}$
	1982-1992	$1.67 \cdot 10^{-4} \text{ }^{\circ}\text{C/day}$	$0.061 \text{ }^{\circ}\text{C/year}$
Daily (decadal)	1993-2004	$2.82 \cdot 10^{-4} \text{ }^{\circ}\text{C/day}$	$0.103 \text{ }^{\circ}\text{C/year}$
	2005-2016	$3.08 \cdot 10^{-4} \text{ }^{\circ}\text{C/day}$	$0.113 \text{ }^{\circ}\text{C/year}$

- A consistent warming trend has been found for Mediterranean sea surface temperature in the 1982-2016 period
- The warming has clearly accelerated in the last two decades
- Warming is less intense in the center of the basin around Italy. Warming rate is higher from May to July (last part of spring to half summer)
- Mediterranean SST show distinct patterns with two main regimes (winter/summer)

Dataset: National Centers for Environmental Information. 2016. GHRSSST Level 4 AVHRR_OI Global Blended Sea Surface Temperature Analysis (GDS version 2) from NCEI. Ver. 2.0. PO.DAAC, CA, USA. Dataset accessed [2017-02-20] at <http://dx.doi.org/10.5067/GHAAO-4BC02>

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