Sources of climate variability and predictability in the Mediterranean regions in 2014

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Overview

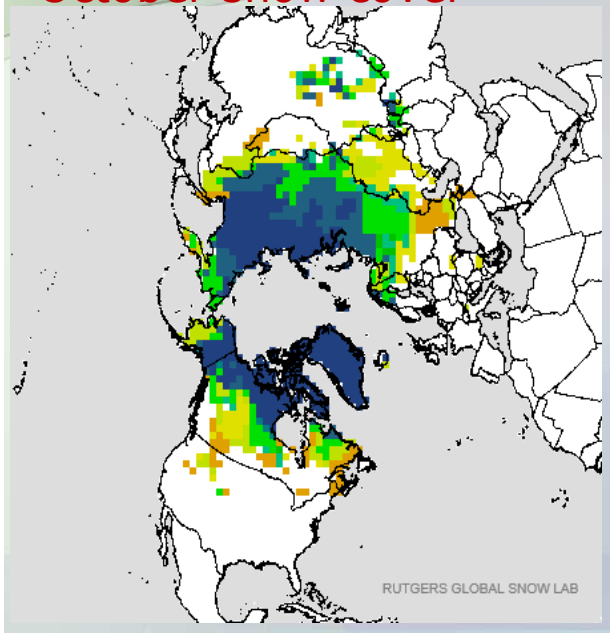
- Climate predictability – challenges and opportunities
- Predictive signals for Mediterranean region
- Preliminary conclusions

Climate predictability – challenges and opportunities

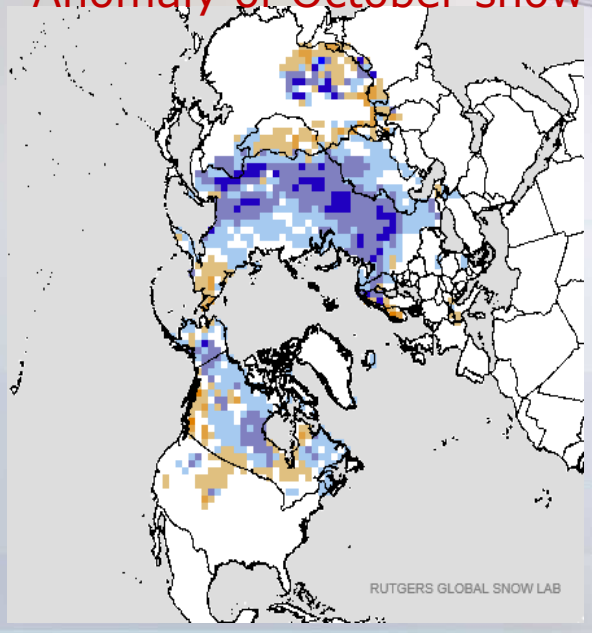
In general, models show low skills over most of our regions.	There are specific predictive signals for certain regions and time scales based on statistical relationships backed by physical frameworks: NAO/AO; ENSO; global warming signal; QBO etc.
The probabilistic essence of climate prediction need a special common language shared by scientists and stakeholders.	Work in progress to shape a communication framework.
Seasonal prediction impact on society is rapid and strong.	Seasonal prediction impact on society is rapid and strong.

Snow-cover signal

October snow cover

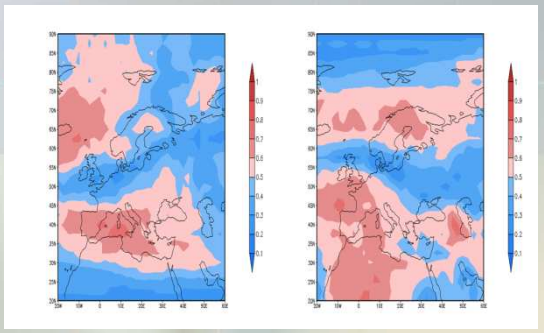


Anomaly of October snow cover



http://climate.rutgers.edu/snowcover/chart_vis.php?ui_year=2014&ui_month=10&ui_set=2

Positive AO/NAO in winter 2014-2015

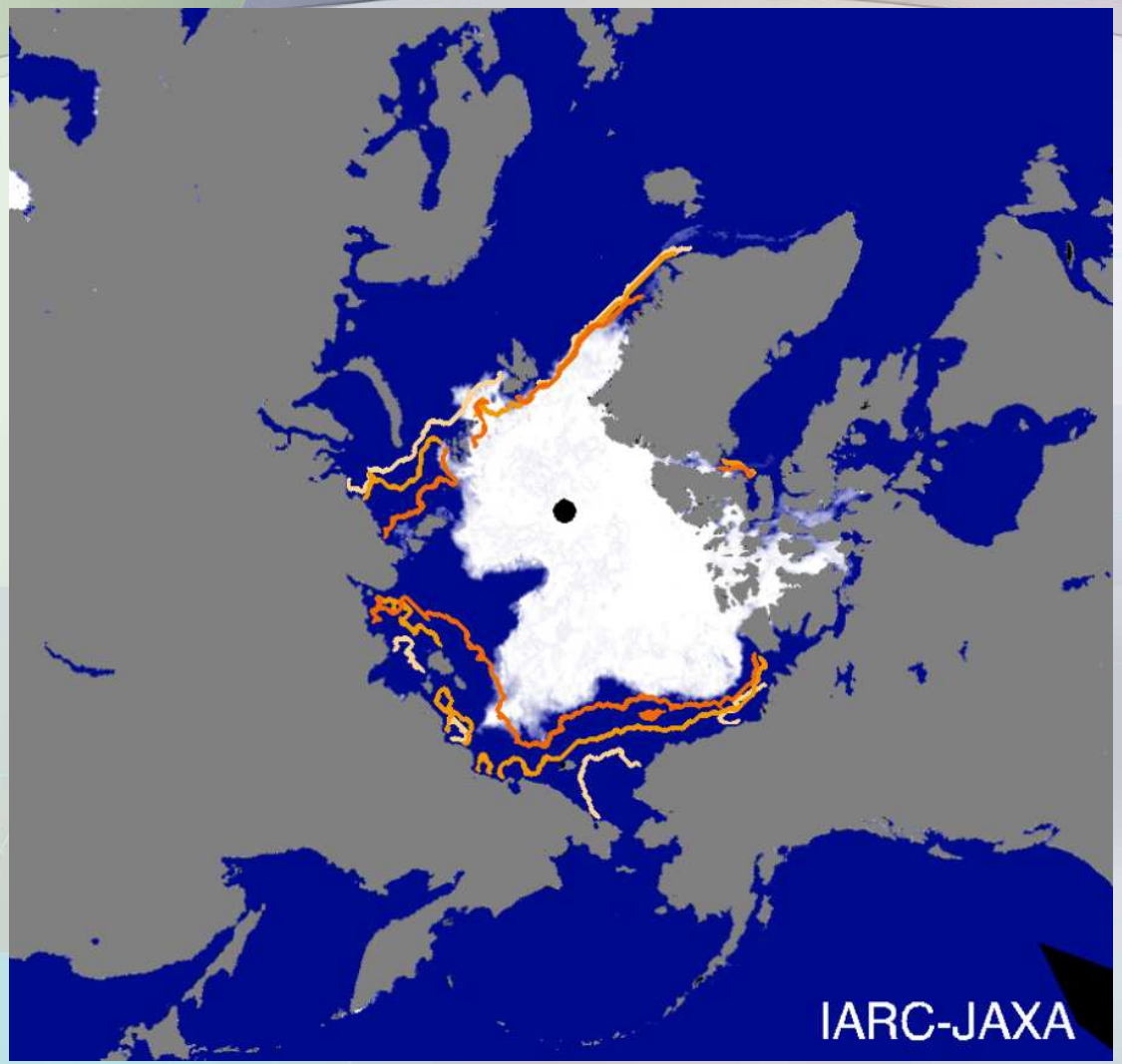


ROC map for NAO like SLP anomalies (1962-2011)

Recent scientific findings related to the daily snow advance index of snow cover southward of 50 deg. N in October (Cohen and Johns, 2011).

Slightly negative AO/NAO

Extent of Arctic sea-ice

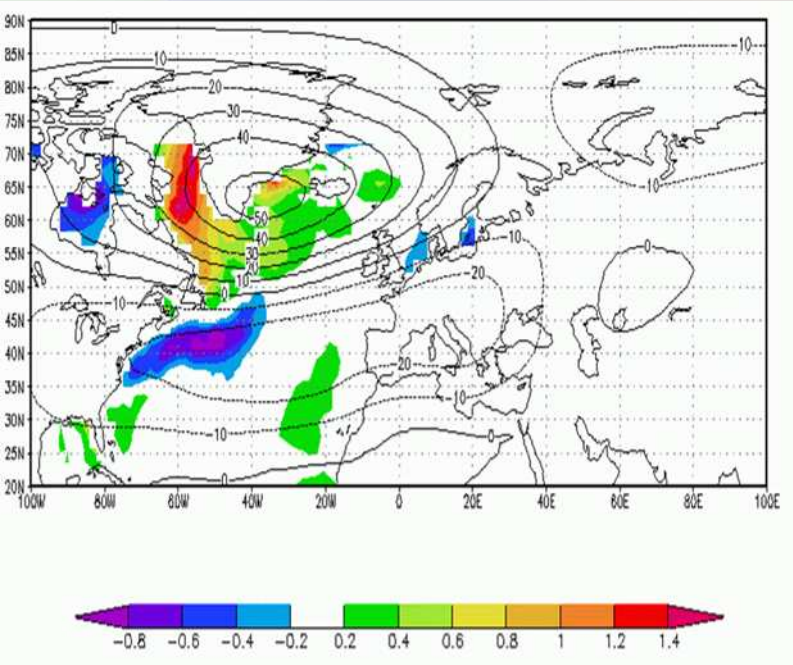


Recent scientific findings related to the daily snow advance index of snow cover southward of 50 deg. N in October (J. García-Serrano & C. Frankignoul, 2014).

September 2014 ice concentration with 80s, 90s and 2000s means

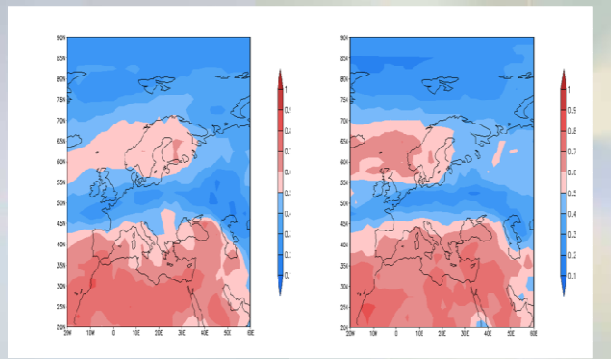
Source: http://www.ijis.iarc.uaf.edu/cgi-bin/seaice-monitor.cgi?lang=e

Atlantic May SST signal



CCA analysis of DJF geopotential heights and previous May SST (1961-2010)

Positive AO/NAO in winter2014-2015

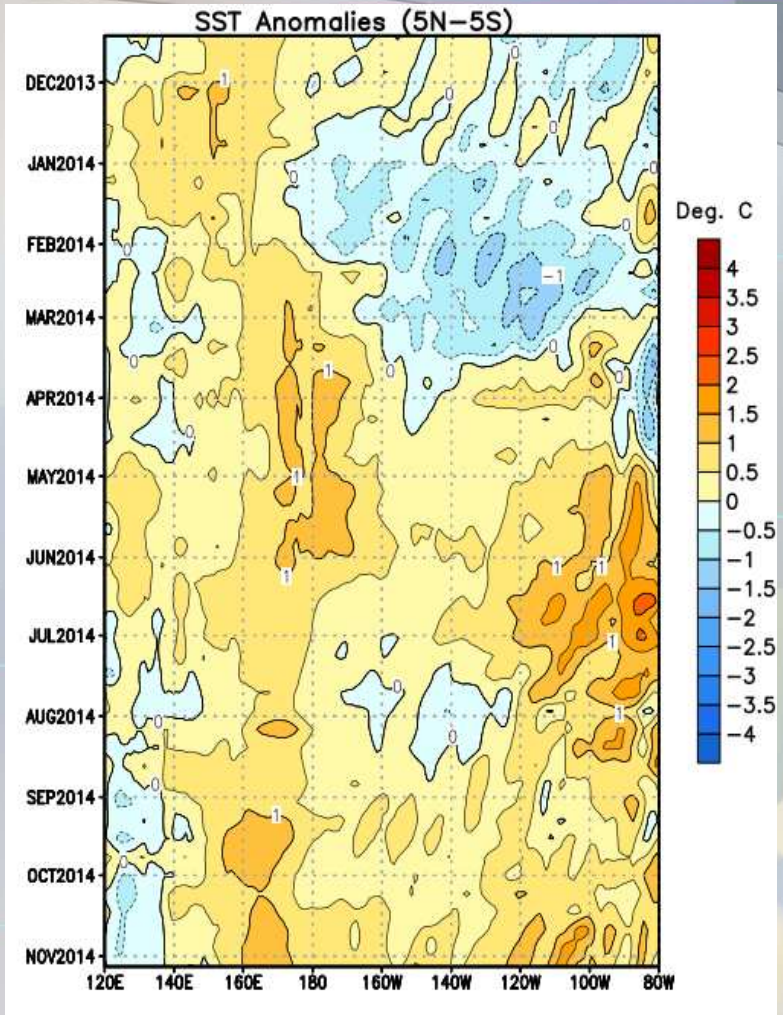


ROC map for NAO like SLP anomalies (1962-2011)

ENSO signal

Recent values of the upper-ocean heat anomalies (near zero) and thermocline slope index (near zero) reflect ENSO-neutral conditions (10th of November 2014).

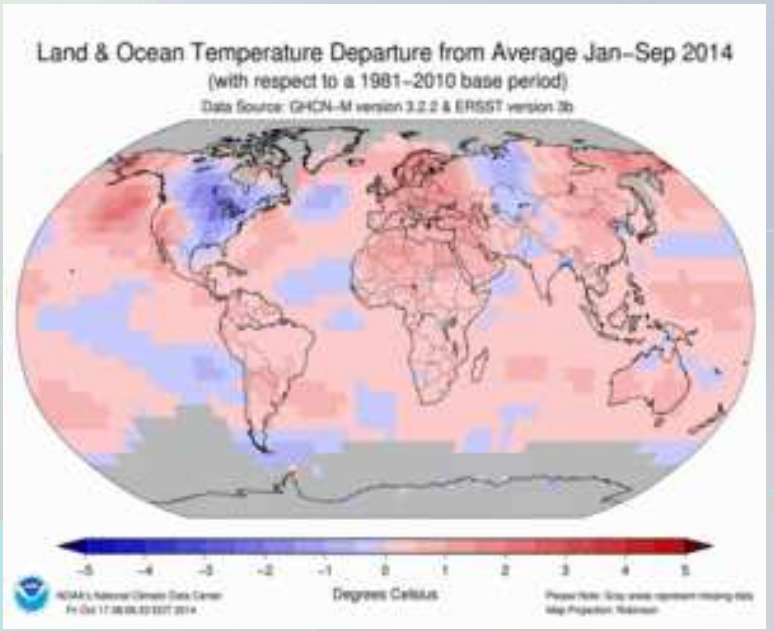
Chances for weak El Nino in the next winter and spring (58 % for winter 2013-2014)– low influence on climate fluctuations over most of Europe.

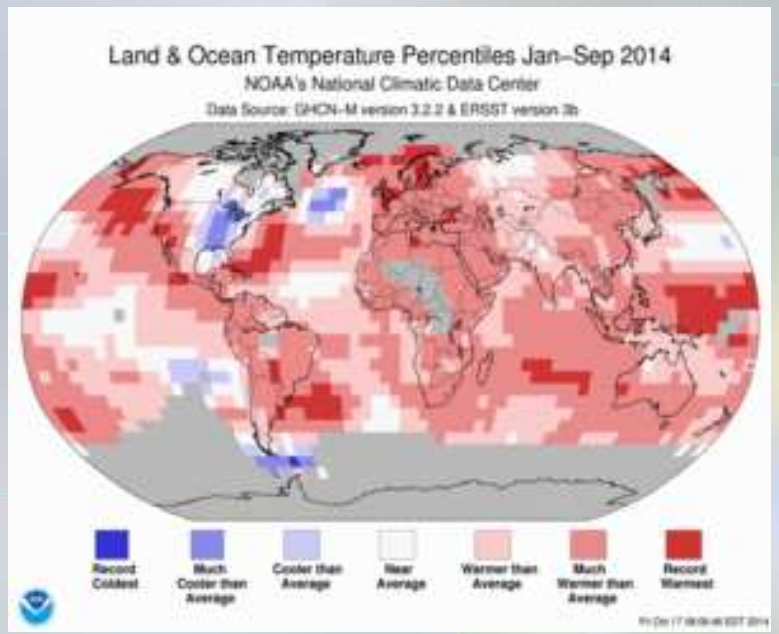


Source: http://www.cpc.ncep.noaa.gov/products/analysis_monitoring/lanina/enso_evolution-status-fcsts-web.pdf

Ocean warming signal – more predictability in climate system

- May, June, August, and September set global temperature records!
- The average **global sea surface temperature was the highest for January–September in the 135-year period of record**, while the average land surface temperature was the sixth highest on record. **This fact implies higher overall predictability in the climate system and greater confidence to models.**





Source: http://www.ncdc.noaa.gov/sotc/global/2014/9

Preliminary conclusions

- **Overall predictability captured by models could be higher for this winter due to observed high SSTs over oceans.**
- **There are suggestions for positive AO/NAO in the next winter from May Atlantic SSTs and snow cover extent in Eurasia in October; however, other snow related signal due to advancement of snow cover in fall suggests slightly negative AO/NAO;**
- **ENSO signal suggest a small impact on our region (now there are neutral conditions and odds are for rather weak El Nino in the next winter and spring).**
- **Forecasted-Mediterranean higher SSTs draw the attention to very extreme weather episodes in winter in Mediterranean regions when (if) atmospheric conditions are favorable, too (e.g. November medicane developed near Malta and Southern Italy).**

METEO ROMANIA

THANK YOU!