

Subseasonal-to-Seasonal (S2S) Task Force

March 2017

Key Questions: Processes and Physics

- What are the dominant physical sources of S2S predictability, and how well are these sources simulated and predicted?
- How do tropical/extra-tropical and stratosphere/troposphere connections influence S2S prediction?

Key Questions: Approaches to S2S Prediction

- What indices/metrics best describe extreme weather phenomena relevant to S2S prediction given the limitations in available model and observed variables?
- How can we seamlessly treat the transition from an atmospheric initial value forecast problem to a boundary value forecast problem across subseasonal (1-4 week) timescales, in terms of forecast products and their validation?
- To what extent can S2S prediction skill be enhanced by statistical post-processing (i.e., model output statistics) for various applications?
- How can single- and multi-model ensembles be best exploited for S2S prediction?

Key Questions: Evaluating and Improving Models for S2S Prediction

- What is the relative importance of model resolution, physics parameterizations and forecast initialization for prediction skill of phenomena on S2S timescales?
- How well do models represent interactions between the tropics and extratropics, troposphere and stratosphere, ocean and atmosphere, land and atmosphere, and between S2S and other timescales?
- What are the main sources of model systematic errors on S2S timescales?

Summary of Activities

Central to NOAA's mission is the goal to **enhance community resilience in the face of weather and climate** extremes. Historically, prediction efforts have primarily targeted either traditional weather (daily) or seasonal (3+ months) forecasts, but **there is urgent need to develop the capability to bridge these timescales**, i.e. the so-called "**subseasonal-to-seasonal (S2S) prediction gap**". Toward this goal, NOAA's MAPP Program has organized a Task Force¹ comprised primarily of scientists funded through a recent MAPP Program competition on S2S prediction to help coordinate and synthesize their research.

Efforts by the S2S Task Force span a wide range of topics that all fit under the umbrella of S2S prediction, including: atmospheric phenomena and processes; interactions at the ocean-atmosphere and land-atmosphere interfaces; organization and testing of dynamical subseasonal prediction models and systems; exploring alternative ways to advance prediction using post-processing techniques. These efforts can be categorized into three sets of Key Questions, each of which are being addressed by multiple efforts within the Task Force.

The efforts of this Task Force will lead to improved understanding of S2S phenomena and their predictability, and will help inform NOAA forecasting operations to improve prediction skill of extreme events (e.g. floods, droughts, heatwaves) at lead times of weeks to months.

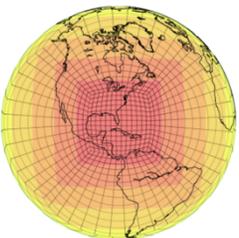
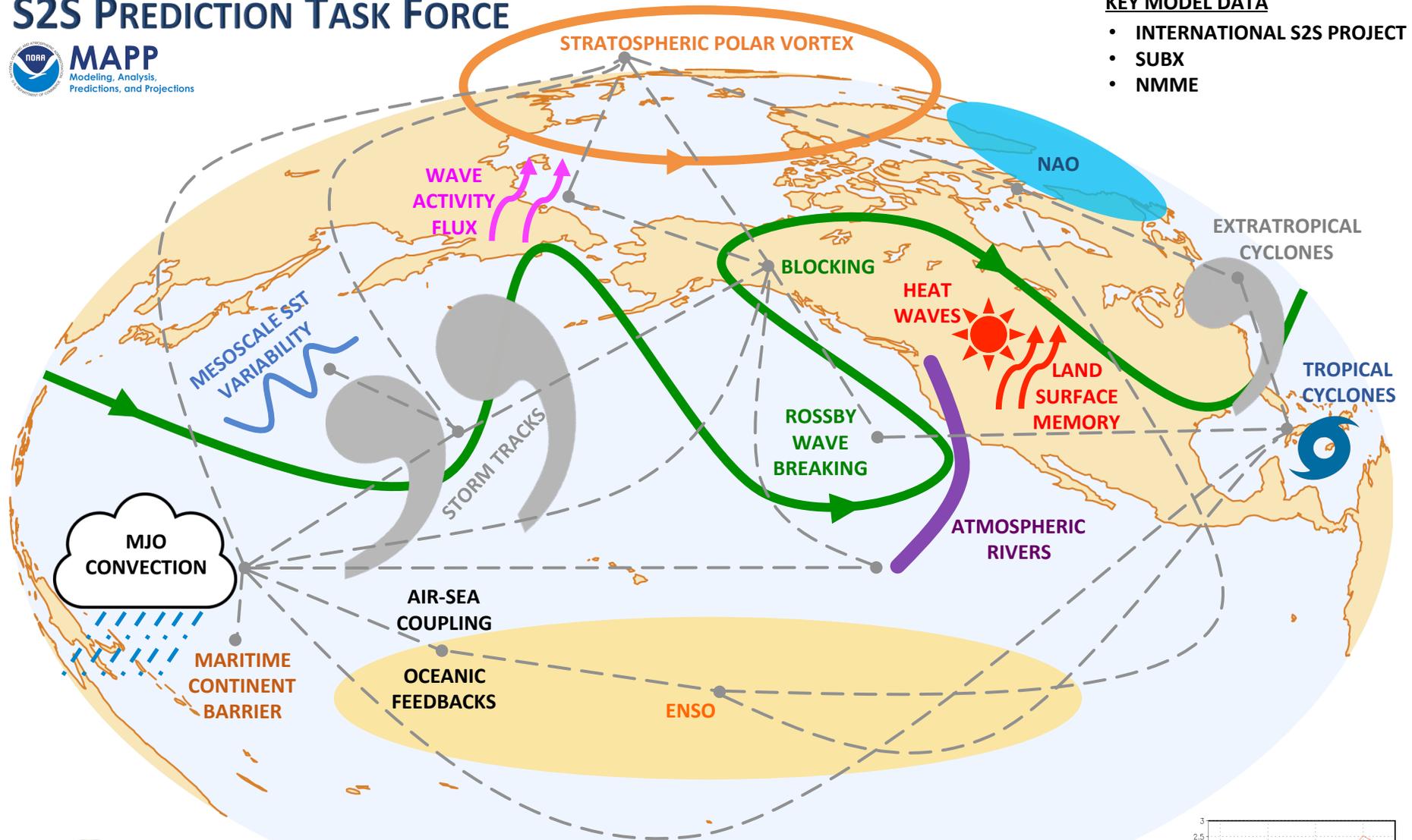
¹ <http://cpo.noaa.gov/MAPP/s2stf>

S2S PREDICTION TASK FORCE



KEY MODEL DATA

- INTERNATIONAL S2S PROJECT
- SUBX
- NMME



- MODEL RESOLUTION
- MODEL PHYSICS
- MODEL FORECAST SETUP
- MULTI-MODEL STRATEGY

