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Explorations of climate predictability based on long term global sea surface temperature observations CONSTANTIN ANDRONACHE, Boston College — While the detailed weather prediction is limited to about two weeks, skilful seasonal forecast is possible in the presence of slow varying boundary conditions (BC) of the atmosphere. Such conditions are satisfied by the sea surface temperature anomalies (SSTA) over large oceanic regions. These BC typically evolve on a much slower time scale than daily weather events and atmospheric predictability can be increased significantly. SSTA tend to have persistence or long memory, due largely to the thermal inertia of the oceans, caused by their heat storage capacity. The ocean communicates its thermal inertia to the atmosphere largely via the surface turbulent fluxes of sensible and latent energy. We use the NOAA Extended Reconstructed Sea Surface Temperature (SST) to investigate sources of predictability at seasonal time scale. We show that: 1) SSTA has a memory or persistence that depends largely on regional location in the global ocean, with the largest values in tropical Pacific; 2) A given SSTA distribution from a particular month, can have corresponding similar configurations in the past, largely due an oscillatory behavior of major SSTA perturbations; 3) Correlation of SSTA from different regions of the global ocean provide a valuable mean to explore climatic teleconnections.

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