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Department of Marine Sciences
Presents a Seminar by

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Can ENSO be linked to astronomic forcing?

The prediction of El Niño-Southern Oscillation (ENSO) is one of the greatest scientific and societal challenges because of its impacts on lives, food, water, health, and economy. Traditionally, ENSO has been considered a phenomenon that is mostly influenced by the interactions between oceanic and atmospheric processes. In other words, it has been attributed to the internal variability in Earth's ocean-atmosphere system. However, records of climate indices and some variability in ENSO have been linked to solar activity (sunspots). Sunspots have been shown to influence air temperatures, atmospheric pressure, cloudiness, and other atmospheric variables. Furthermore, dendrochronological reconstructions of ENSO and of other climate indices have identified statistically significant variance at periodicities that can be attributed to sunspots and also to lunar orbits (precessions). Those findings suggest that astronomic forces may influence ENSO. In fact, a fit to well-established periodicities from lunar precessions, solar activity and their interactions explain 66% and 86% of the variance of an ENSO index smoothed at 3 and 5 years, respectively. Satisfactory results are also obtained for the representation of interannual sea-level variability. With such results, one can venture a projection into the future of smoothed ENSO and sea-level variability. Such projection might help in preparations for adaptation and mitigation measures caused by ENSO-related coastal hazards and sea-level rise.

Host: James O'Donnell

Time & Date: 11:00 am, Friday, March 10, 2023

Place: Lowell Weicker Building, Seminar Room 103 (or WebEx)

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