[JJ] Evening Poster | A (Atmospheric and Hydrospheric Sciences) | A-OS Ocean Sciences & Ocean Environment

[A-OS15]Dynamics of oceanic and atmospheric waves, vortices, and circulations

convener:Ryo Furue(APL/JAMSTEC), Yuki Tanaka(Graduate School of Science, The University of Tokyo), Yukiharu Hisaki(琉球大学, 共同), Norihiko Sugimoto(Keio University, Department of Physics)
Sun. May 20, 2018 5:15 PM - 6:30 PM Poster Hall (International Exhibition Hall7, Makuhari Messe)
Oceanic and atmospheric dynamics aims at abstracting general principles from observed phenomena and constructing a system of mathematical models, thereby leading to the understanding, prediction, and parameterization of those phenomena. It provides perspectives for the advancement of sciences in various areas such as wind waves, swells, internal waves, Rossby waves, equatorial waves, tides, eddies, meandering of jets and fronts, general circulation, boundary layers, and ocean-atmosphere coupled modes. It has also been and will continue to be benefited by new uses of ideas and methods from such theories as resonance, nonlinear interaction, spectral analysis, probability, statistics, and dynamical systems. In this session, we solicit presentations on observational, experimental, numerical, and theoretical studies of oceanic and atmospheric dynamics and on exploratory use of new ideas and methods. We also welcome presentations on new methods of data analysis and on interdisciplinary studies in fields such as climate and environment.

[AOS15-P06]Revisit of the formation and distribution of mesothermal and dichothermal structures (temperature inversions) in the North Pacific using an eddying OGCM

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The formation and distribution of the mesothermal and dichothermal structures (temperature inversions) in the North Pacific are investigated using an eddying (1/10 x 1/10) Pacific OGCM. The distribution of the modeled inversions are closely related to the strong currents in the northern North Pacific, indicating that lateral advection is essential for its distribution and temporal variability. The modeled mesothermal structures are found more than 90% of the year in the Subarctic gyre west of the dateline and along the Subarctic Current (SAC). Its southern boundary is quite distinct between the dateline and the Gulf of Alaska. Its northern and eastern boundary is are somewhat unclear partly due to the presence of strong mesoscale rings in the Gulf of Alaska and along the Alaskan Stream. In winter and spring, they are found along the current associated with the Subarctic Boundary (SAB-C) and Alaskan Stream. The distribution of the modeled dichothermal structure is similar to that of the mesothermal structure, but the region where the dichothermal structure is found more than 90% is only limited along the SAC and shows a large inter-annual variability. In these areas the dichothermal structures are created upstream and advected downstream below the seasonal thermocline. These findings in the model is consistent with that found in the WOA13.