[EE] Evening Poster | M (Multidisciplinary and Interdisciplinary) | M-GI General Geosciences, Information Geosciences & Simulations

[M-GI22]Data assimilation: A fundamental approach in geosciences

convener:Shin'ya Nakano(The Institute of Statistical Mathematics), Yosuke Fujii(Meteorological Research Institute, Japan Meteorological Agency), SHINICHI MIYAZAKI(京都大学理学研究科, 共同), Takemasa Miyoshi(RIKEN Advanced Institute for Computational Science)

Sun. May 20, 2018 5:15 PM - 6:30 PM Poster Hall (International Exhibition Hall7, Makuhari Messe)

Data assimilation is an inversion approach to estimate the evolution of a system by utilizing a constraint given by a dynamical simulation model. Data assimilation is now widely used not only in meteorology and oceanography but also other fields of geosciences such as hydrology, solid earth science, and space science. This session aims at providing an opportunity for discussion on data assimilation studies among researchers of various field of geosciences. We encourage contributions addressing novel methods and theoretical developments of data assimilation. Contributions dealing with useful applications of data assimilation are also welcome.

[MGI22-P01]Inversion of the ocean vertical diffusivity from steady-state tracer distributions by using an adjoint method

★ Invited Papers

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The ocean vertical diffusivity is important for controlling the distribution of various ocean tracer including the temperature and salinity. Recent studies clarified that its spatial distribution is very inhomogeneous but the global coverage of its direct measurements from turbulent mixing observations are not enough and its quantification is still difficult. On the other hand, recent observational data about the ocean tracer including temperature and salinity are increasing significantly and dataset covering the global ocean is available. The inversion of ocean velocity distribution from ocean tracer has been reported in the previous studies (e.g. Wunsch, 1996). In the same way as this velocity inversion, some studies tried the inversion of the ocean vertical diffusivity (e.g. Ganachaud and Wunsch, 2000) but there are few studies which discuss its detail 3-dimmensional distribution. In this presentation, I will report some attempts about the inversion of the ocean vertical diffusivity from the ocean tracer distribution; I focus on the temperature, salinity, and carbon isotope (C14) and discuss how their steady-state distribution is useful for obtaining the 3-dimmensional distribution of the ocean vertical diffusivity.