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Assimilation of Earth Orientation Parameters to determine ocean mass change

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Earth orientation parameters (EOP) are measured with very high accuracy. Changes in the EOP originate in movements of mass within the Earth system. Therefore, these changes represent a good way of distinguishing eustatic (mass) and steric (volume) effects in sea level change. We were able to assimilate measured EOP into a global circulation model of the oceans. By simultaneously assimilation of oceanographic data as SSH and ocean temperatures into an model conclusions about the ocean heat content can be drawn. On interannual timescales the model shows realistic behavior and succeeds in reproducing the EOP observations. The biggest impact is on the total ocean mass variation.