1145-60-819 **Peter Jan van Leeuwen*** (p.j.vanleeuwen@reading.ac.uk). *Transportation Particle Filter for high-dimensional geophysical applications.*

Data assimilation, the science of combining large observation sets with complex high-dimensional numerical models, is often highly nonlinear. Particle filters are promising for these problems but traditionally suffer from filter degeneracy where only one particle is weighted high by the observations, and the rest obtain very low weights. The way forward seems to be particle filters that have equal weights by construction. One of those filters is transportation, in which the particles are transported from samples of the prior to samples of the posterior. By embedding the flow map (not the prior or the posterior!) in a Reproducing Kernel Hilbert Space we develop a smooth iterative mapping that minimises the KL-divergence between the intermediate pdfs and the posterior. We will show results of this methodology on realistic high-dimensional geophysical problems and specifically discuss issues related to the high-dimensional applications. (Received September 15, 2018)