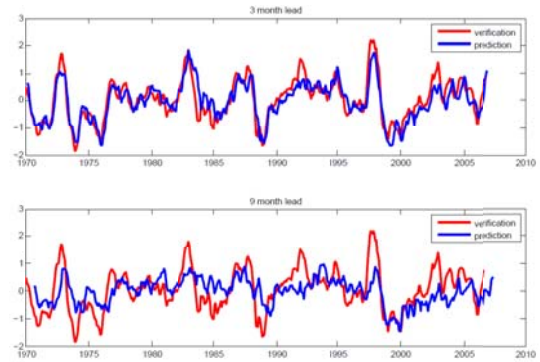
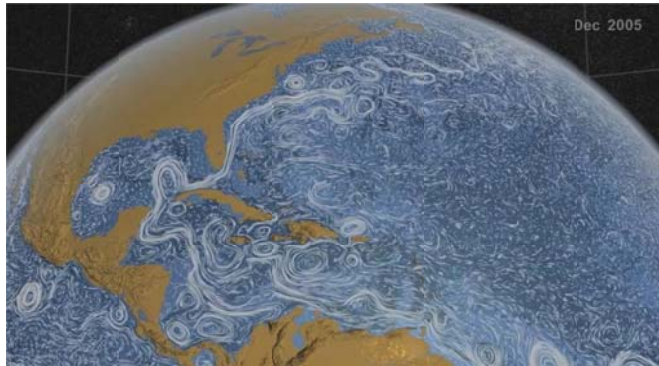


Seminar course: Stochastic methods for climate, atmosphere and oceans

Universiteit Utrecht, spring (feb-june) 2014

Instructor: Daan Crommelin (CWI/UU), email Daan.Crommelin@cwi.nl



Over the last 10-15 years, researchers in climate-atmosphere-ocean science have increasingly made use of stochastic methods for modeling and understanding the dynamics of the climate system and its atmospheric and oceanic components. This development has led to the emergence of an exciting and fruitful interdisciplinary research topic in which applied mathematicians and climate-atmosphere-ocean scientists interact on a range of problems, such as the simulation and coarse-graining of multiscale dynamical systems, stochastic subgrid-scale modeling, fluctuation-dissipation relations and linear response theory, statistical mechanics approaches to fluid dynamics and statistical modeling of spatio-temporal processes.

In this seminar course we will read and discuss literature from this field of research. The course is primarily intended for master students and beginning PhD students in mathematics and climate-atmosphere-ocean science. Students from other disciplines as well as researchers interested in the course topic are also welcome to participate. Students are required to have basic knowledge of stochastic processes and dynamical systems, as well as some experience with numerical simulation of these systems. Most importantly, enthusiasm and interest in interdisciplinary research involving applied mathematics and climate-atmosphere-ocean science are indispensable for this course.

During seminar meetings, we will discuss research articles (1-2 each meeting), to be presented and introduced by students. These articles will be assigned at the beginning of the semester. Towards the end of the semester, students are expected to carry out a small project relating to one of the topics discussed during the seminar. These projects, involving numerical simulations, will provide an opportunity to get some hands-on experience on the topic. The course concludes with presentations by students on their projects. Course grades will be based on article presentation, project and active participation during discussions.

For more information on this course, please contact the instructor or check the course webpage at www.cwi.nl/~dct/seminar_uu_spring2014.html