CNRM, UMR 3589

SEMINAIRE CNRM

N° 2020_06

mercredi 4 mars 2020 à 14h

BRIDGING PHYSICS AND MACHINE LEARNING FOR THE MODELLING, SIMULATION AND RECONSTRUCTION OF GEOPHYSICAL FLOWS

par Ronan FABLET

(IMT Atlantique)

en salle Taillefer de Navier

Résumé :

Whereas model-driven approaches represent the state-of-the-art for the analysis, simulation and reconstruction of physical systems, learning-based and data-driven frameworks become relevant schemes for a large number of application domains, including for the study of phenomena governed by physical laws. They offer new means to take advantage of the potential of observation and/or simulation big data. In this context, making the most of model-driven and data-driven paradigms naturally arises as a key challenge.

In this talk, we will discuss these research avenues and give some illustrations on ocean monitoring applications (e.g., reconstruction of sea surface tracers, maritime traffic surveillance). We will specifically address how neural networks can provide novel means for the data-driven identification of representations of dynamical systems, which are imperfectly observed (e.g., noisy data, partial observation, irregular sampling..). We might further discuss the relevance of dynamical system theory for the understanding of state-of-the-art neural networks, especially residual nets.

Pour tout renseignement, contacter Y. Poirier (05 61 07 96 55)
Centre National de Recherches Météorologiques
42, Avenue G. Coriolis - 31057 Toulouse Cedex