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GeoCod: Integrating Fisheries and Environmental data for a better understanding of spatial and temporal changes of four key species in the NW Atlantic region

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This presentation gives an overview of the Canadian project GeoCod, which aims at better understanding spatial and temporal changes in the abundance of four key fishery species (Atlantic Cod, Pandalid Shrimp, Snow Crab and Capelin) in the NW Atlantic region. GeoCod is a three-year research project involving three Canadian Universities and several Canadian and international partners from government, industry and NGOs. The project aims at (1) integrating existing environmental and fisheries data for the NW Atlantic region, (2) analyzing the data using spatial statistics to understand better the relationships between the four fish species and their environment, as well as the relationships amongst the species, and (3) develop new tools to visualise and analyse fisheries data. Fisheries scientific surveys (SS) and fisheries observer program (FOP) data of the four Canadian Atlantic regions (Quebec, New-Brunswick, Nova-Scotia and Newfoundland and Labrador), in addition to data from the USA, were collected and integrated into a single database which includes about one million records. This exercise has been challenging as data were typically stored and analysed separately by the different administrative regions and were hence very heterogeneous regarding the technologies used to collect them (e.g. gear type), time of year, etc. Preliminary results are presented, with a focus on spatial statistics techniques that can provide insightful results not always identified by traditional statistical approaches. In addition, GIS-based visualisation tools have been developed to allow fisheries scientists, decision-makers, or even the general public, to easily view or analyse the data. These tools allow viewers to seamlessly connect the different datasets, visualise interpolated surfaces of species abundances (e.g. catch per unit effort), look at animations of changes over time, or perform different analyses on the data to better understand spatial and temporal dynamics of the stocks.