A JOURNEY FROM DYNAMICS AND GEOMETRY TO THE ENVIRONMENT AND CLIMATE

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Abstract. Finding order in the apparent chaos that seems to govern transport processes in the ocean is a challenge. In this talk I will describe dynamical system tools that are able to highlight beautiful geometries in the ocean and conform an efficient underlying transport network. Two selected cases will be described from this perspective. First, I will explain how this dynamical template accurately described the long-time behavior of the fuel spill subsequent to the sinking of the Oleg Naydenov fishing ship in the Gran Canaria coast, in Spain in April 2015, confirming that these tools were able to identify potentially dangerous regions for these kind of environmental disasters. Additionally, I will also explain the use of these techniques to analyze transport across the Atlantic Meridional Overturning Current (AMOC), a complex convective system in the Atlantic Ocean involved in the distribution of heat, carbon or nutrients, which plays a central role in the Atlantic climate.