Parsimonious Rules in Complex Marine Ecosystems

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Complexity is inherent to biological systems and embedded at all levels of organization in marine ecosystems. In this keynote I will provide an overview of Parsimonious Rules capturing essential features of complexity across a range of Marine Ecosystems. I will summarize insights into the structure of networks in marine ecosystems, and how they can be used to examine properties and stability of metapopulations and food webs, scaling laws capturing quasi-universal patterns of organization and dynamics in marine ecosystems, and complex patterns emerging from simple rules that govern landscape formation and dynamics across marine ecosystems. This keynote summarizes two decades of cross-disciplinary collaboration between marine ecologists and scientists focussed on complex systems at IFISC, and will provide some reflections on the keys to successful collaboration toward advancing our understanding of marine ecosystems.