



## ***Climate change, Artisanal Fisheries and Human Dimension***

### ***Study Area***

The Patos Lagoon is a shallow lagoon in the state of Rio Grande do Sul, in extreme southeastern Brazil. The Patos Lagoon is connected to the Atlantic Ocean by a 1 to 2 km wide and 12 meters deep channel. The estuary of the Patos Lagoon has an area of approximately 1,000 km<sup>2</sup>, involving five municipal districts of the extreme South of Brazil. Approximately 52.500 people are involved directly and indirectly with the productive fishing sector (processing and commercialization) that can benefit with this fishing activity in the region. This is about 25% of the 200 thousand inhabitants of Rio Grande, the most important city in the Patos Lagoon estuary. The estuarine shallow waters provide vital habitats to the coastal fisheries of South Brazil, which, in the past, accounted for 25 % of the total national catches.

The dynamics of the estuary are mainly dependent on the wind and on the freshwater discharge and salinity distribution correlates with wind forcing and variations in freshwater input on scales of hours to weeks. Wind variability is important in the control of recruitment of early stages of fish to the estuary, and extreme freshwater discharge events (El Niño phenomena) observed in this region can significantly change the estuarine ecosystem, modifying the fish assemblage and shrimp catches in the region.

The economical activity of the estuarine area of the Patos Lagoon was configured, until the beginning of the decade of 1980, as an artesinal fishing center of outstanding importance in southern of Brazil, with positive social and economical repercussions. From the end of the 19th century to the beginning of the 1980's, the system was highly productive, resulting in captures as significant as the State's industrial fishing. The pink-shrimp was an important resource captured and contributed with a significant contribution of the total landings. However, in the last 20 years, a crisis of the artesinal fishery has taken place. The crisis, caused by an intense and continuous decreasing trend of the capture had deleterious impacts in the social-economy of the region.