



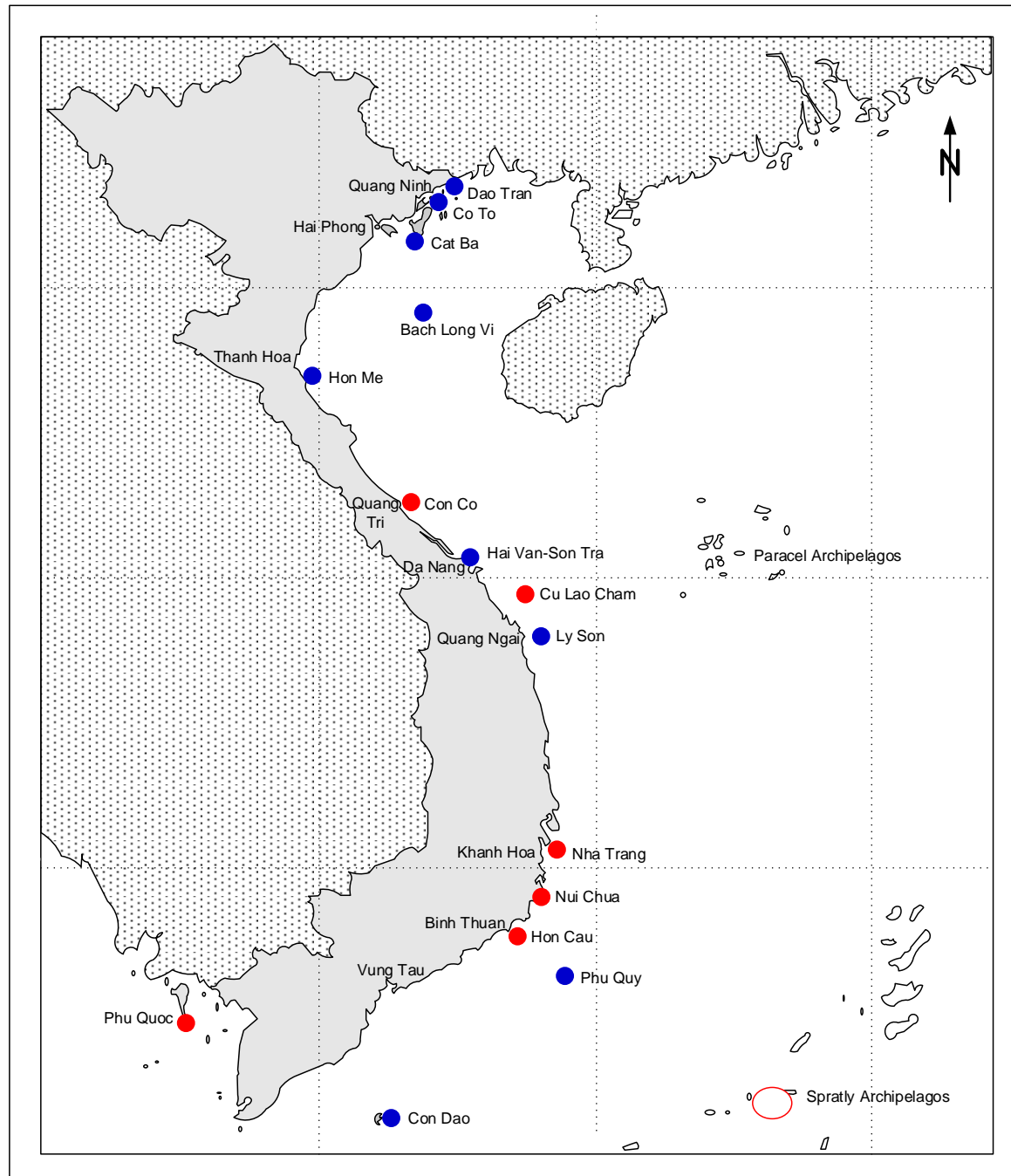
Monitoring Activities of Coral Reefs in Vietnam



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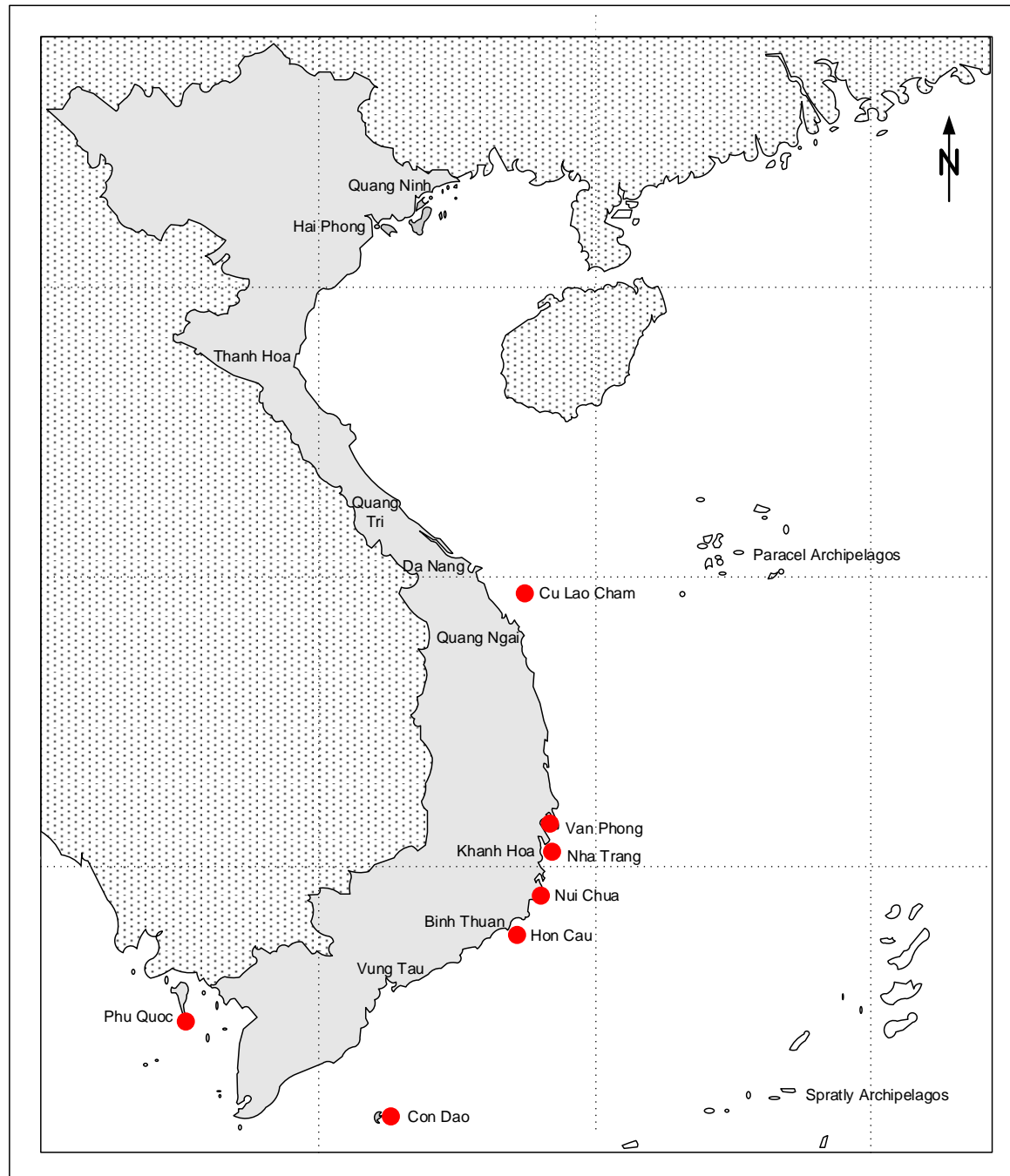
MPA system in Vietnam

- 16 MPAs approved by Prime Minister in 2010
- Total area is 270,271 ha, of which 169,617 ha is marine
- 6 existing MPAs



Monitoring system in Vietnam

- Established since 1998 at 8 sites and increased to 11 sites in 2000 to 53 sites in 2006 and 33 sites in 2012.
- 6 key areas regularly monitored

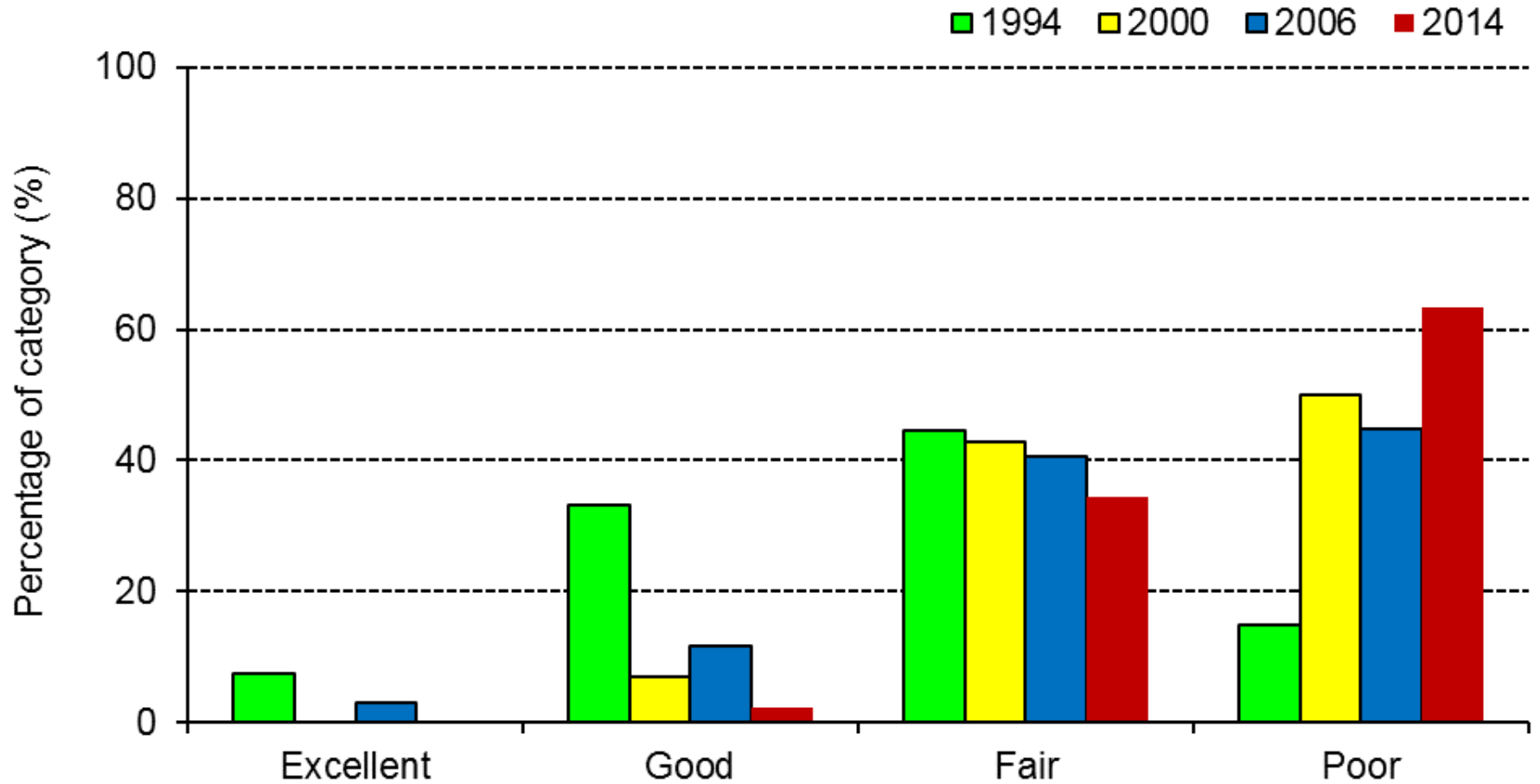


Parameters monitored

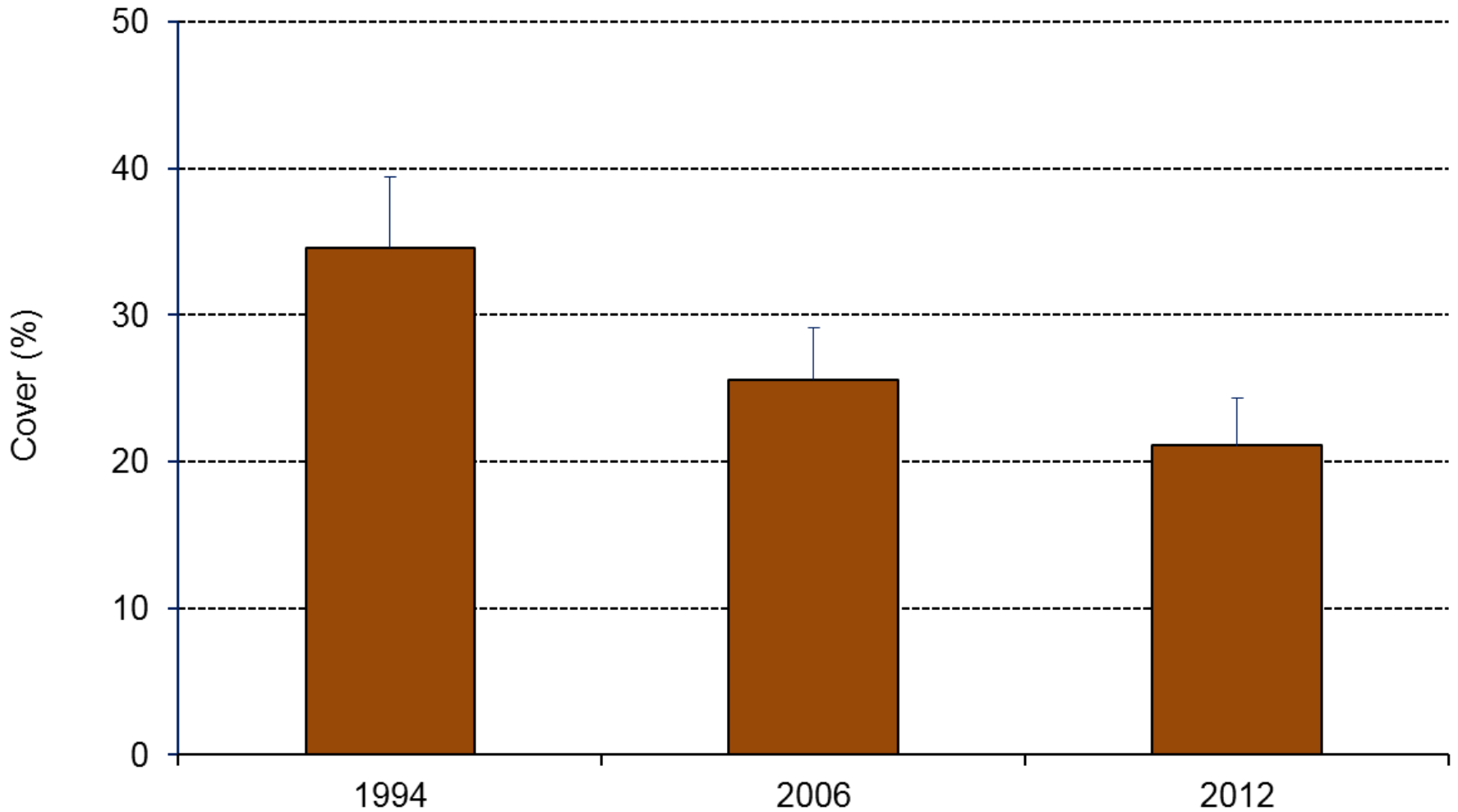
- Benthic covers: Living and non-living substrata
- Reef fishes: Reefcheck and local indicators.
- Macro-invertebrates: Reefcheck indicators.
- Impacts: Physical indicators (dynamite, anchoring, coral bleaching, COTS, *Drupella* snails).



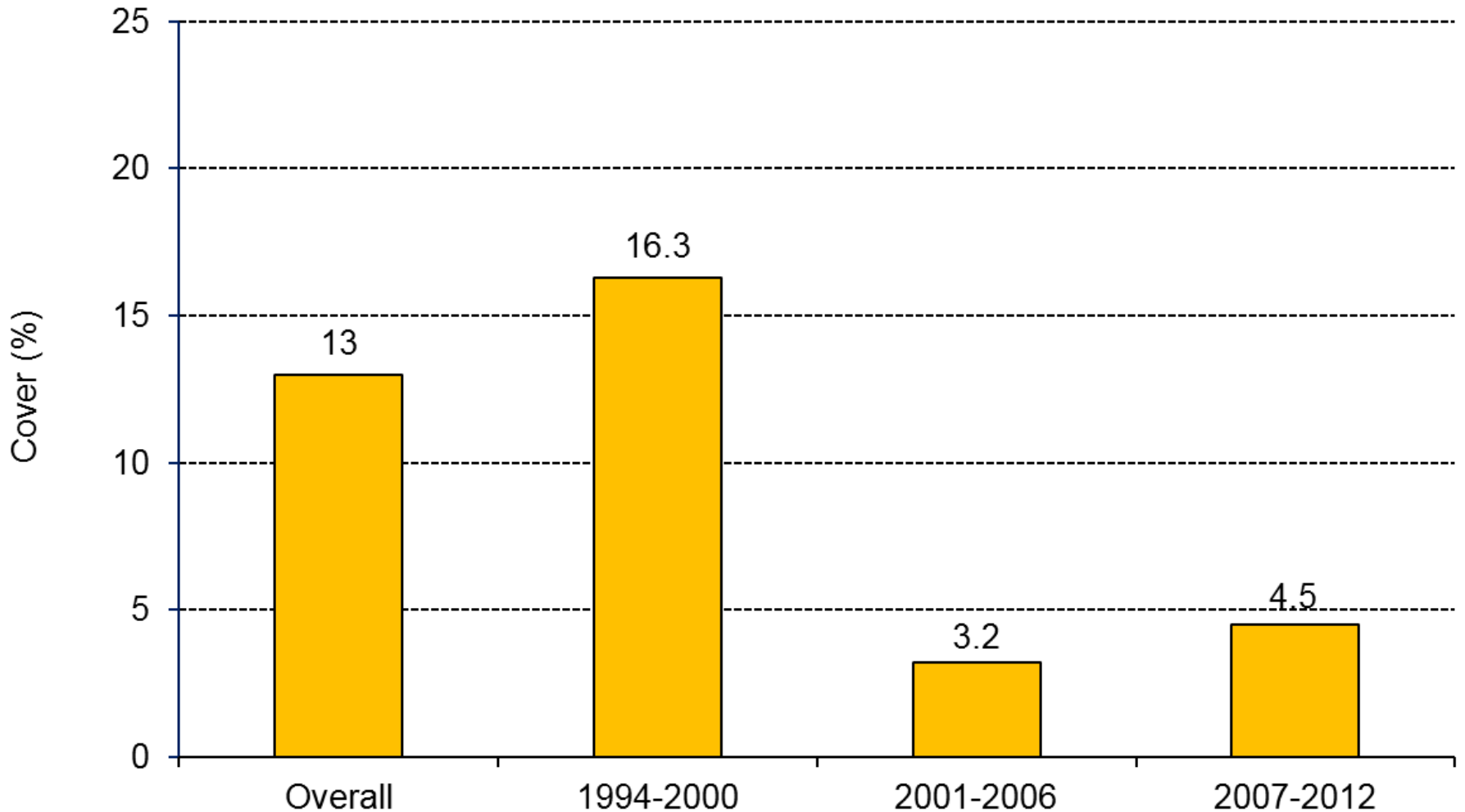
Change in condition of coral reefs between time



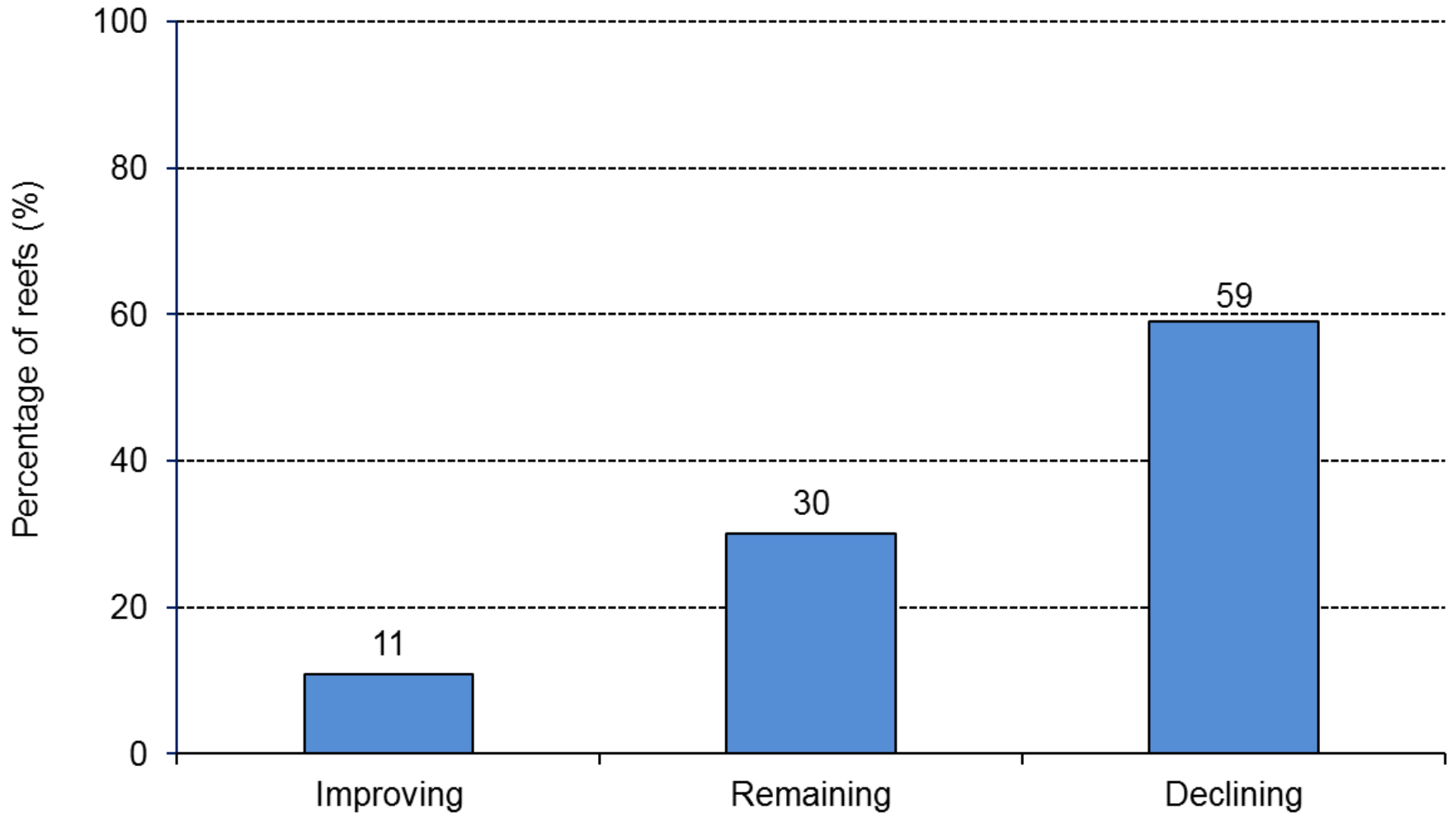
Decline in hard coral cover from 1994 to 2012



Overall interval decline in hard coral cover between periods of time



Estimation of changes in reef conditions between 1994 and 2012

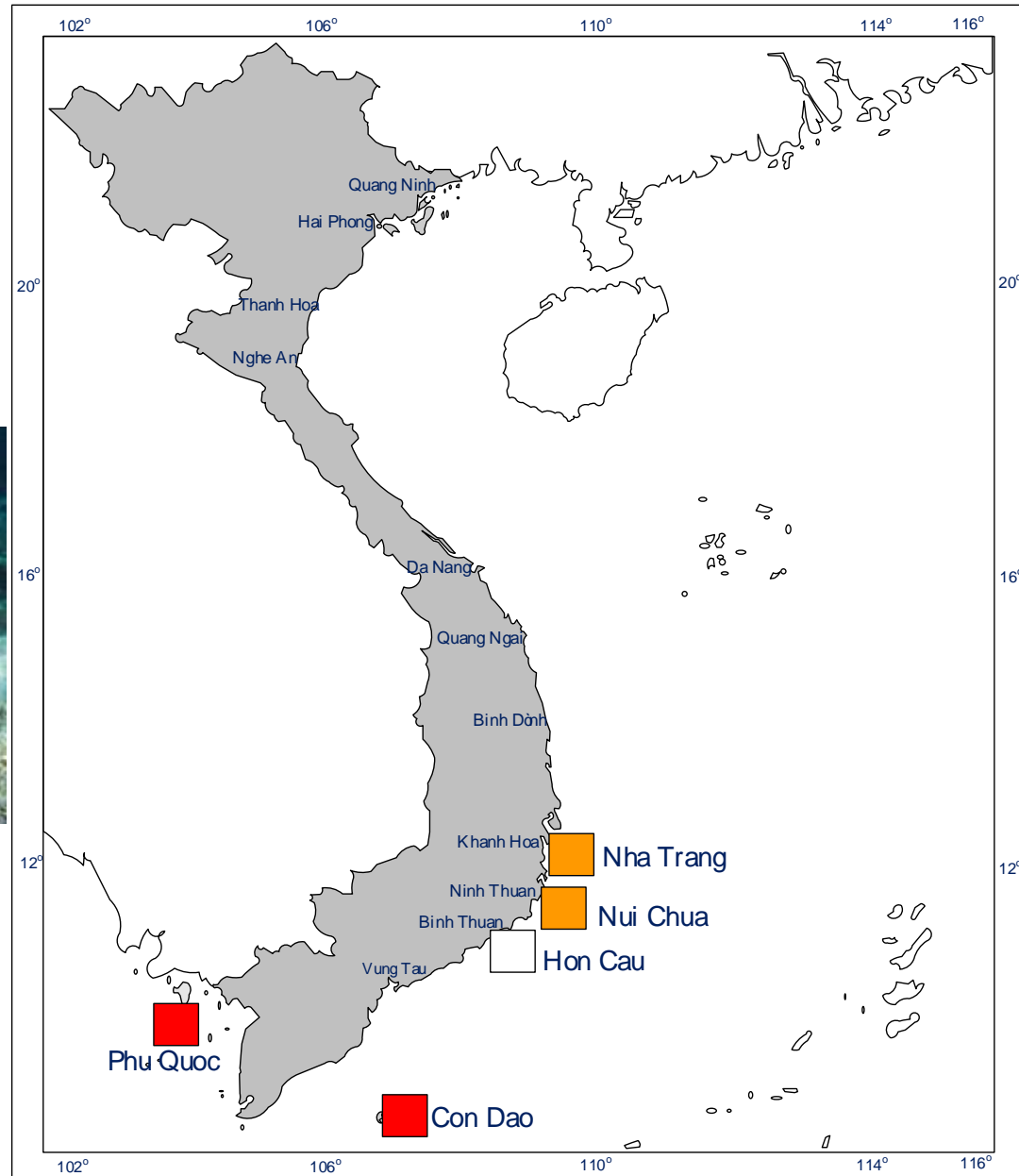


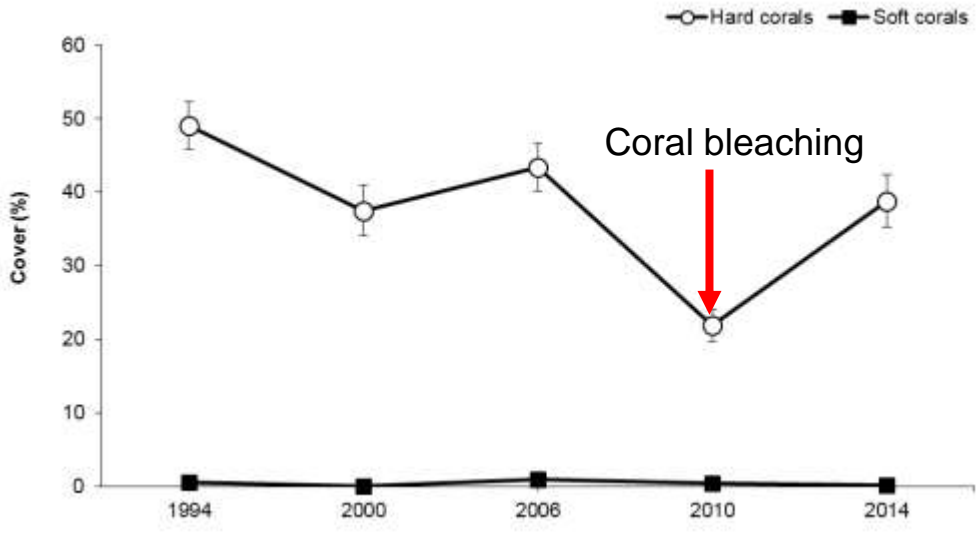
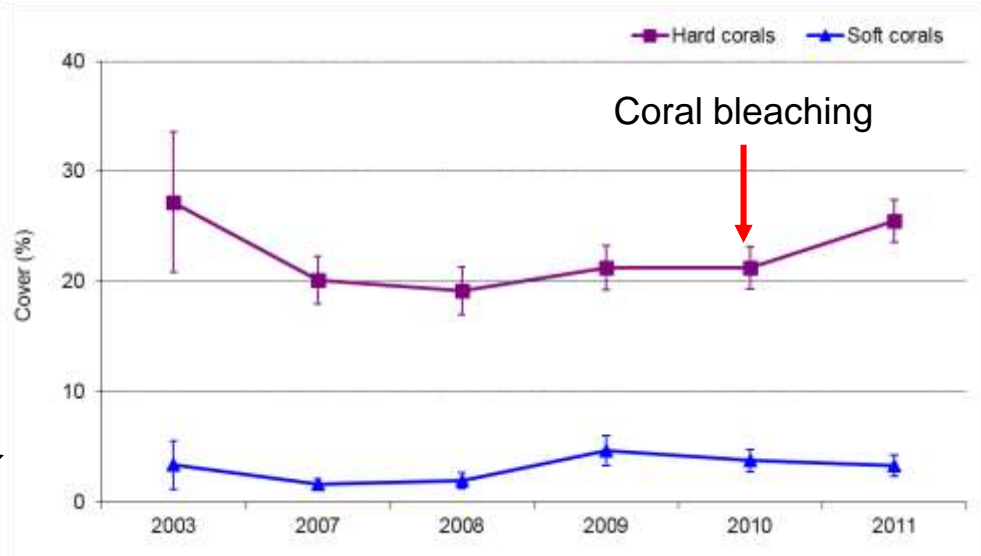
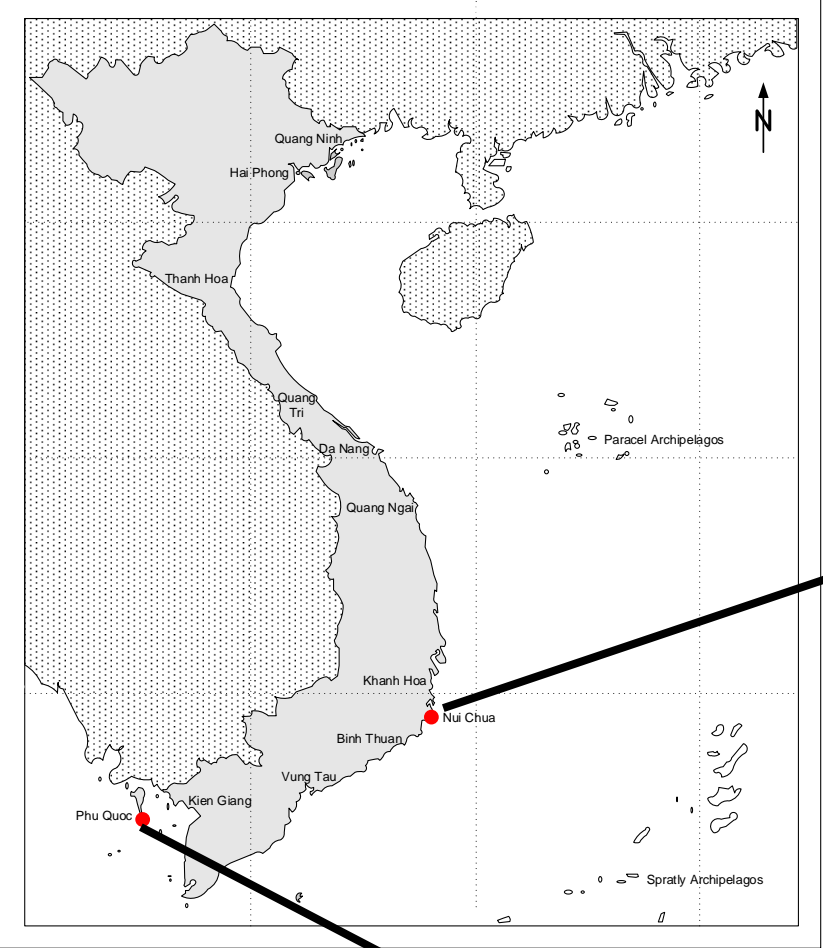
Impacts to coral reefs

- Overfishing
- Destructive fishing
- Sedimentation and pollution
- Aquaculture development
- Tourism development
- Outbreak of predators (COTS, snails)
- Bleaching & red tides



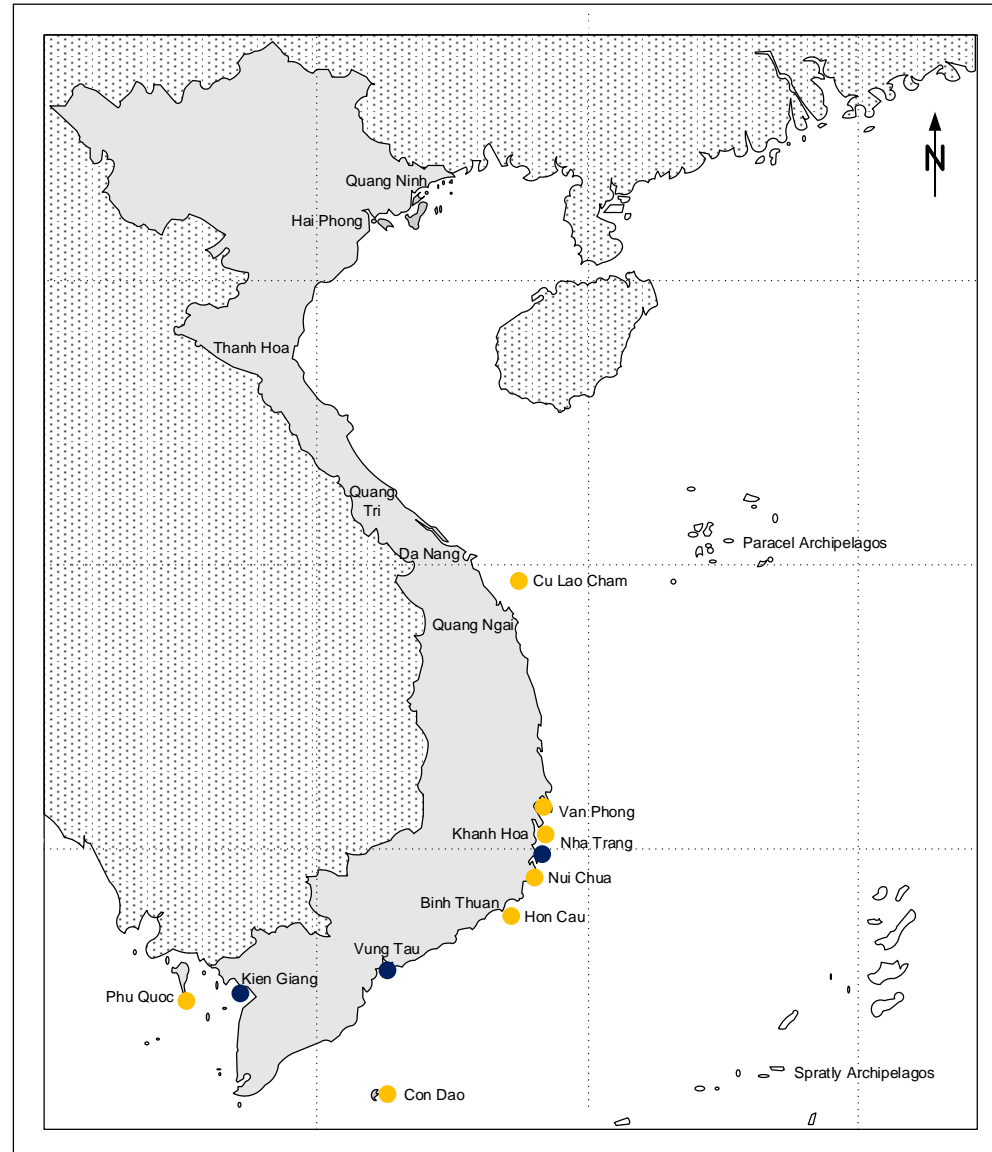
Coral bleaching in 2010





Future Direction

- Maintenance of monitoring of biophysical factors with the addition of some parameters (pH, CO₂) at key locations of coral reefs and 3 sites in the national environmental monitoring system established since 1998.
- Development of new projects for research and monitoring of impacts from ocean acidification to coral reefs.





THANK YOU !