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Regional Climate Projections

Climate Change and Marine Turtles in the Wider Caribbean

Climate change and sea turtle nesting

Changing conditions in sea turtle nesting areas that could limit growth and reproductive potential are potentially serious for populations that are already under pressure worldwide due to high mortality from fisheries, over-exploitation and habitat modification. Successful reproduction is key for population survival and understanding how nesting habitats may be affected by climate change is a key early step in assessing the vulnerability of regional sea turtle populations. Nesting conditions are likely to be different in the future given projected shifts in temperature and precipitation.

Regional climate change

Climate changes will not be uniform across the globe as they are influenced by local physical processes. Such localized changes in climate need to be included in management plans to mitigate the impact of climate change on nesting sea turtle populations. WWF has used regional projections for changes in temperature and precipitation to investigate the vulnerability of sea turtle nesting sites to changing nesting conditions in the Wider Caribbean. The main aims of this project are:

- to create a comprehensive, interactive, online map that can be used by conservation groups and coastal managers to examine the local changes in climate that sea turtles will face throughout their range in the Wider Caribbean
- to assess the relative vulnerability of different nesting areas in the region to climate change

Regional climate change projections for the Caribbean have been developed by the PRECIS-Caribe project. PRECIS (Providing Regional Climates for Impact Studies) is a PC-based regional climate model developed by the Hadley Centre, UK. Data for projected changes in precipitation and surface temperature for two seasons (January and July) for 2020, 2050 and 2099 were used. Projections were for the SRES A2 emissions scenario. Temperature and precipitation projections for thirty-eight countries within the region were extracted for each season in each year.

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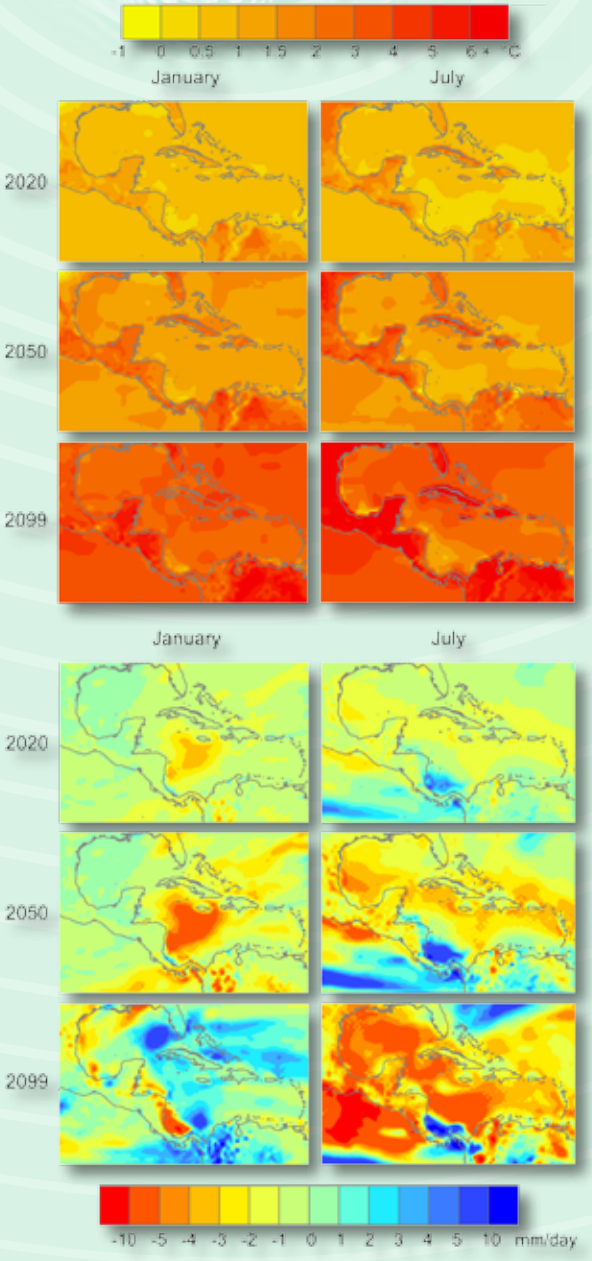
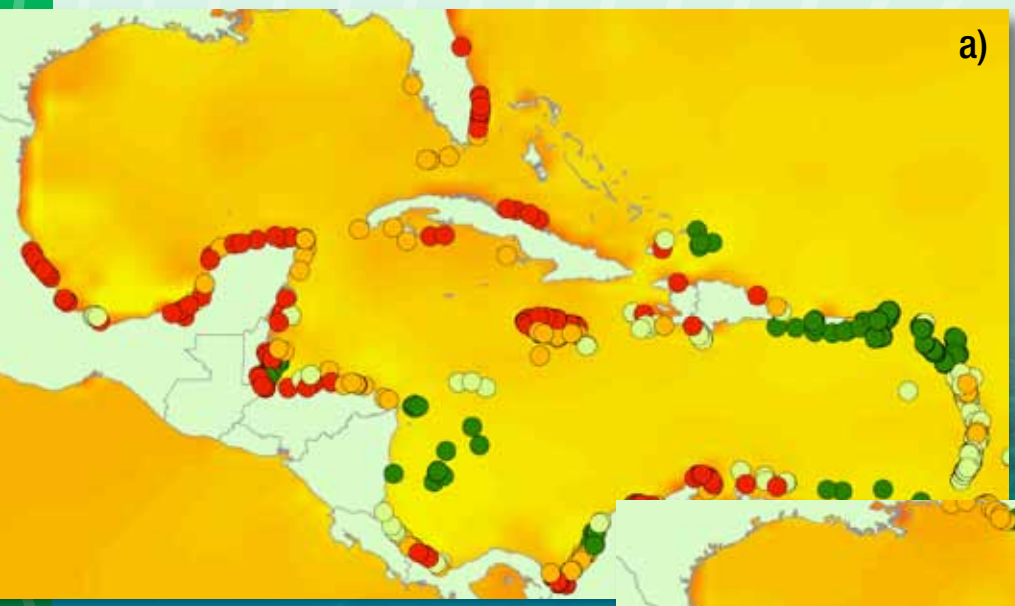
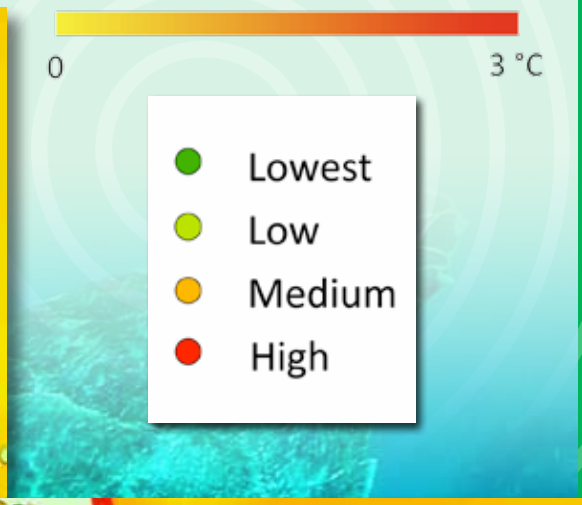
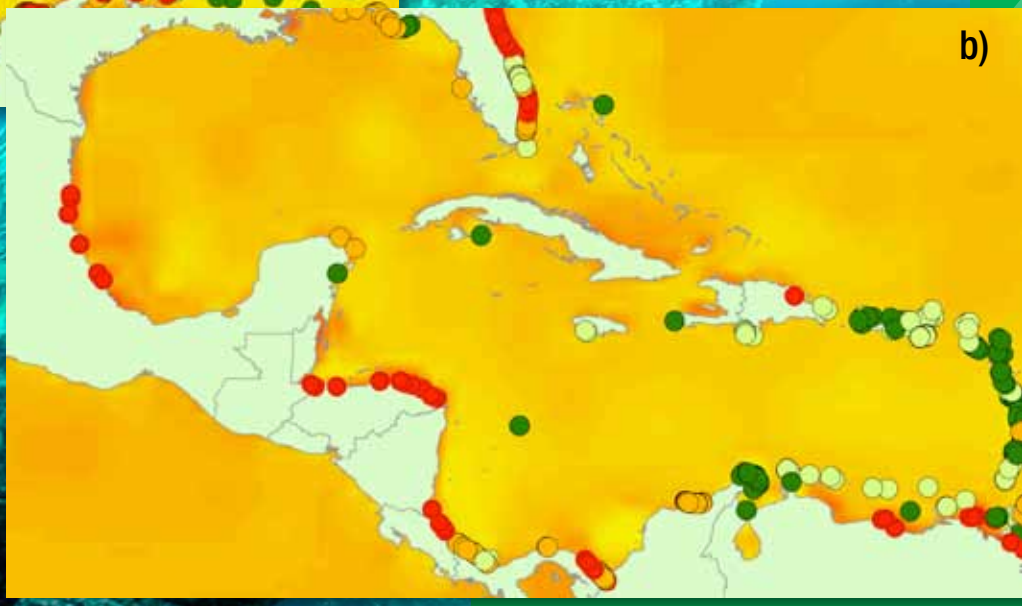


The Caribbean region is facing much warmer and drier conditions in the coming decades. The variation in local changes seen here, particularly for precipitation, highlights the importance of examining future projections on a finer scale than global climate models can provide. In general, small islands show less dramatic projected changes in both temperature and precipitation than mainland countries and as such may provide refugia from hotter, drier conditions in other parts of the region.

The severity of risk to regional sea turtle populations largely depends on these species' ability to naturally adapt; if females can shift nesting location/timing to compensate for increasing temperatures the negative impacts on the population may be lessened. Vulnerability of nesting areas also depends on the management actions put into place to mitigate the impacts of changing conditions (see Fish, M.R. and C. Drews. 2009. Adaptation to climate change: options for marine turtles. WWF report, San José, pp. 20).







Projected changes in peak nesting month temperature for a) hawksbills (August) and b) leatherbacks (May) 2020 and ranking of nesting sites in the Caribbean region by projected temperature change (based on current nesting season).

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See the full *'Fish, M.R., A. Lombana and C. Drews. 2009. Climate change and marine turtles in the Wider Caribbean: regional climate projections. WWF report, San José, pp. 20'* at

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For more information see
www.panda.org/lac/marineturtles/act
or contact
cctortugas@wwfca.org