

#SROCC

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INTERGOVERNMENTAL PANEL ON Climate change



IPCC Special Report on Global Warming of 1.5°C



SPECIAL REPORT 1.5 –

Every half degree (0.5°C) matters. Every Year matters. Every Action matters.

The time for action is now.





INTERGOVERNMENTAL PANEL ON Climate change

The Ocean and Cryosphere in a Changing Climate

This Summary for Policymakers was formally approved at the Second Joint Session of Working Groups I and II of the IPCC and accepted by the 51th Session of the IPCC, Principality of Monaco, 24th September 2019

Summary for Policymakers













Photo: Glenn R. Specht

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Sea Level Rise

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Photo: Mr. JK

Ocean and Marine Life



Level of added impacts/risks

— Very high ——	Purple: Very high probability of severe impacts/ risks and the presence of significant irreversibility or the persistence of climate-related hazards, combined with persistence of climate-related hazards, combined with limited ability to adapt due to the nature of the hazard or impacts/risks.	•••• = Very high ••• = High
— High ——	— Red: Significant and widespread impacts/risks.	•• = Medium
— Moderate ——	— Yellow: Impacts/risks are detectable and attributable to climate change with at least medium confidence.	• = Low = Transition range
— Undetectable ——	— White: Impacts/risks are undetectable.	**see figure caption for definition

Confidence level for transition





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Sea level rise risk and responses

The term response is used here instead of adaptation because some responses, such as retreat, may or may not be considered to be adaptation.

(a) Risk in 2100 under different sea level rise and response scenarios

Risk for illustrative geographies based on mean sea level changes (medium confidence)

Combining Scientific, Indigenous and Local Knowledge

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CB3.2). The complexities of governance arrangements in the ocean, coasts and cryosphere (Figure CB3.1), and the interactions and emergence of relationships between different governance actors in multiple configurations across various spatial scales (Figure CB3.2) are illustrated below.

Increasing Complexities of Ocean Governance

UNEP

WMO

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Pacific Messages –

Every island matters. Every cm (sea level rise) matters. Every body matters. Every voice matters

The time for action is now.

Weaving the Laea for Oceania:

Pacific Assessment of Our Changing Climate and Ocean

Sail in Pacific Languages

Cook Islands ск - Takie FSM F2 - Terag Fiji FJ – Laca/ Soko Kiribati кı – Te Borau Niue NU -La Palau P? - Yars PNG PG - Sel RMI ??? - Wojla Samoa 🛛 s - Folau Tokelau тк – Fakatele / Folau Tonga T^P Leae (Folau / Faila) Tuvalu T2 - Fakatele

-0.05

0.04 0.03

0.02 0

0.01 0.00

COPERNICUS MARINE ATLAS FOR THE PACIFIC **OCEAN STATES**

We have created an Atlas for the Pacific Ocean States that delivers ocean data to address the needs of decision-makers and to meet climate directives. It responds directly to Fiji's requests at the 2017 United Nations Oceans Conference for the Sustainable Development Goal (SDG)14 (for life below water) and in the 2017 COP23 conference for SDG13 (on climate action).

Temperatures are rising in the surface and deeper

waters of the Pacific Ocean around the islands

THE PACIFIC ISLAND STATES ARE PARTICULARLY VULNERABLE TO THE CHANGING MARINE ENVIRONMENT.

They face unprecedented threats to the 3 pillars of sustainable development: economy, environment, and society.

Western Ppolfic

+0.02 10.01

Islands

In addition to the threats caused by ocean warming, sea level rise and the decrease in phytoplankton, the Pacific Island States ite in a path where many devastating storms pass. Hurricanes / typhoons / cyclones extract heat from the surface and sub-surface of the ocean, which acts as a source of energy making them stronger and last longer. Sea surface temperature and ocean heat content are important variables for forecasting and understanding these storms and other weather events.

you know?

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12071

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Central Pacific

+0.01 :0.02

listanda

security at risk.

Did

Sea surface temperatures are rising throughout

the Pacific Ocean around the islands

OCEAN HEAT CONTENT (OHC) Units: Watts/W Twend from 1993 to 2017 / 0-700 m Pacific Western Pacific Central Popific +1.2 Islands Islands lalanda. 10.7 Total area +1.9 +15 +0.8 10.7

Ocean Heat Content (OHC) includes water temperatures at the surface and beneath the opean surface. It is used to track changes it sea level stratification, ocean currents, as well as in manne ecosystems. The ocean is a major heat source for global

atmospheric circulation and has important implications for regional and global climates, including severe events. With rising ocean temperatures, marine ecosystems are also damaged. Many species suffer or de off, putting

econumies and food security at risk.

Figure Upper scene heat corner# (0-700 memory in Walts per require many (Witer') trend from 1963-2017. in this section: the entitie figure domain represents Pacific. latands total area", the blue box represents "Western Pacific Interests" and the purple teptements' Tarrenal Pacific bilands "wa

The sea level is rising throughout the Pacific Ocean

THERMOSTERIC SEA LEVEL

The sea level is rising mainly due to melting seand thermal expansion (water explands when heated, a phenomena referred to as thermosteric sea level rise). About 40% of contemporary

global sea level rise can be attributed to ocean thermal expansion. At a regional level, the thermosteric effect can dominate the sea level change in the area.

around the islands

The Pacific Ocean is warming significantly and this goes hand-in-hand with the sea level rise in the region.

15

1.0

0.5

0.0

-0.5

-1.0

-1.1

Sea level is an important variable to inform divinate adaptation and coastal planning. Seal level rise can seriously affect human populations

in coastal regions and natural environments on fand as well as marine ecosystems.

We defined by the IL/ Coloros agreement and served by the Kills ACP anomiatel. #30 explore the dynamics tricke and cutable the Western Pacific Warm Prod the domain was further subdivided Figure: Des level trend in millemetres per tear (mm/pear) Incm 1993-2017

SEA SURFACE

+0.02

Linits *C/year

Pocific

Islands.

Total area

Trend from 1993 to 2017

TEMPERATURE (SST)

Sea surface temperature is used to assess

climate change impacts and is essential

for weather and extreme event prediction

Units: % / year Trend from 1997 to 2017

Islands -0.7 :0.001

Central Peoifia

the oxygen content in the Earth's Nearly all ocean life depends on phytopiankton health. Chlorophyll a atmosphere and it consumes an is used as a proxy to monitor entermous amount of parbon. phytopiankton, which is the base of Charges in phytoplankton the marine food web. Nearly half of populations can impact all the production of organic matter ecosystems and biogeochemical on Earth take's place in the ocean. cycling, which in turn impacts. economies and food availability Phytoplankton photosynthesis contributes to more than half of

Figure: Chi-9 trend from September 1997- December 2017 as percentage per year

Longitude cert lead to coral reef damage (coral Figure. Sea surface temperature transitions 1995bleaching) and biodiversity loss, putting 2017 in degrees Debutus per year ("C/year) IBack coastal protection, economies and food their sectors in all of several means and there is incomplete a.

Overall decrease in phytoplankton in the Pacific Ocean around the islands

The Copernicus Marine Atias for the Pacific Island States shows sustained and drastic ocean warming, sea level rise, and a decrease in the base of the marine food chain (phytoplankton)

