**1. What is the purpose of the Indian Network of Climate Change Assessment (INCCA)?**

Answer: To assess the drivers and implications of climate change through scientific research and prepare climate change assessments.

**2. How does the IPCC characterize the impact of human activities on climate?**

Answer: The impact of human activities on climate is unequivocal (IPCC, 2007).

**3. Which social and economic sectors in India were assessed for climate change impacts in the 2050s and 2080s?**

Answer: Water resources, agriculture, natural ecosystems and forestry, human health, infrastructure, and energy.

**4. What regions in India are considered climate-sensitive in the assessment?**

Answer: Himalayan region, North-Eastern region, Western Ghats, and Coastal region.

**5. What institutions are involved in the Indian Network of Climate Change Assessment (INCCA)?**

Answer: Various ministries, research institutions, and NGOs, including the Ministry of Environment and Forests, Indian Space Research Organisation, and Indian Institute of Technology.

**6. How are climate change scenarios derived in the assessment?**

Answer: Climate change scenarios are derived from the regional climate change model PRECIS, forced by a greenhouse gas emission scenario (A1B IPCC SRES).

**7. What is the time frame for the 2030s in the context of climate change scenarios?**

Answer: The 2030s represent the average of the period between 2021 to 2050.

**8. How is sea-level rise projected along the Indian coastline?**

Answer: Sea-level rise projection along the Indian coastline aligns with global projections from the IPCC Fourth Assessment Report.

**9. Which simulation model was used to assess the impact on agriculture productivity?**

Answer: InfoCrop was used to assess the impact on the productivity of cereals and coconut plantations.

**10. What are the key sectors of the economy assessed for climate change impacts in the 2030s?** - Answer: Agriculture, water, natural ecosystems and biodiversity, and human health.

**11. Why was no assessment using the crop model carried out for the Himalayan region?** Answer: Due to the lack of required climate data at a 1o x1o scale.

**12. How are impacts on livestock productivity analyzed in the assessment?**

Answer: Analysis is based on temperature and humidity projections from PRECIS for the 2030s.

**13. What methodology is used to assess natural ecosystems and biodiversity?**

Answer: The assessment is mainly based on a review of available literature and the use of a dynamic vegetation model IBIS.

**14. What parameters are required by IBIS for assessing forest vegetation and Net Primary Productivity?**

Answer: Monthly temperature, precipitation, relative humidity, wind speed, cloudiness, and soil texture.

**15. How are the impacts of climate change on human health assessed qualitatively?** Answer: The likely impact on morbidity and mortality due to extreme temperatures, flooding, melting glaciers, and sea-level rise.

**16. Which tool is used to simulate runoff in the river basins for the water analysis?** Answer: SWAT (Soil and Water Assessment Tool) is used for simulation.

**17. How does the assessment contribute to adaptation strategies?**

Answer: Short-term assessments like those for the 2030s help develop adaptation strategies for a foreseeable future.

**18. What is the significance of the Minister for Environment & Forests launching INCCA in 2009?**

Answer: It aims to enhance knowledge about the impacts of climate change at the national and subnational levels.

**19. What are the four major climate-sensitive regions in India discussed in the assessment?**

Answer: Himalayan region, North-Eastern region, Western Ghats, and Coastal region.

**20. How does the report address the impacts of climate variability in India?**

Answer: The report reviews the impacts of climate variability in the four major climate-sensitive regions.

**21. What is the resolution of the regional climate change model PRECIS used in the assessment?**

Answer: The resolution is 50km x 50km.

**22. How is the transmission of malaria assessed in the 2030s?**

Answer: Transmission windows are defined in terms of temperature and relative humidity.

**23. Why is sea-level rise expected to continue even if GHG emissions are halted today?**

Answer: The ocean has a significant thermal inertia, leading to a delayed adjustment in sea level.

**24. How does INCCA contribute to building capacity for managing climate-change-related risks?**

Answer: INCCA is designed to build capacity through scientific research, decision support systems, and engagement with knowledge institutions.

**25. Which sectors were assessed in India's Initial National Communication to the UNFCCC?**

Answer: Water resources, agriculture, natural ecosystems and forestry, human health, infrastructure, and energy.

**26. What are the key features of INCCA's programs, as shown in Figure ES1?**

Answer: Assessing drivers and implications of climate change, preparing climate change assessments, developing decision support systems, and building capacity.

**27. What is the role of institutions like ISRO and CSIR in studying climate change in India?**

Answer: These institutions, along with others, are working on various studies on climate change in collaboration with the Ministry of Environment and Forests.

**28. How is livestock productivity impacted by climate change in the assessment?** Answer: The analysis is based on temperature and humidity projections, estimating the temperature–humidity index related to animal stress.

**29. What regions are considered in the assessment for the impact on fisheries?**

Answer: The impact on coastal fisheries is considered in the Western Ghats, North-Eastern region, and Coastal regions.

**30. What is the baseline period for assessing changes in the 2030s?**

Answer: The baseline period is the average of 1961 to 1990s, also referred to as the 1970s.

**31. Q: Why is impact assessment research considered a complex challenge?**

*Answer: It includes physical, biological, and socio-economic aspects, requiring evolving tools for scientific rigor.*

**32. Q: What is the climatological diversity of India and how does it complicate the assessment?**

*Answer: India's diverse climate, characterized by subregional features, challenges region demarcation due to seamless merging.*

**33. Q: What challenges arise in demarcating the coastal region for assessment purposes?**

*Answer: Defining the coastal zone, covering 5,500km along the mainland and 20,000km along islands, poses a significant challenge.*

**34. Q: What are the uncertainties in modeling and data gaps highlighted in the assessment?**

*Answer: Inherent uncertainties include assumptions about future population, socio-economic factors, and technical changes, leading to uncertainties in emissions and modeling processes.*

**35. Q: Why is a higher resolution model suggested for capturing regional details in India?**

*Answer: To capture fine-scale details in specific regions like inner Himalayan valleys, higher resolution models (at least 25km x 25km) are deemed more appropriate.*

**36. Q: How do observations from satellite measurements differ from IPCC model projections in terms of sea-level rise?**

*Answer: Observations show a faster sea-level rise (3.4 mm/year) than the IPCC model projection (1.9 mm/year), attributed to the response of continental ice to greenhouse warming.*

**37. Q: What limitations are associated with the InfoCrop model used for assessing agriculture productivity?**

*Answer: The model doesn't consider socio-economic trends, technological improvements, and pests/disease scenarios, impacting the comprehensive assessment of agriculture.*

**38. Q: Why does the IBIS model used for assessing changes in vegetation require a long-term observational plan?**

*Answer: The model's accuracy is limited due to the lack of an extensive finely gridded database on soil, water, climate, and vegetation types.*

**39. Q: What challenges are associated with the SWAT model used for assessing water yields in various regions?**

*Answer: Challenges include obtaining information from global sources, assuming static man-made changes, and the need for scenario projections reflecting realistic trends.*

**40. Q: How is the entire Indian region climatologically divided in the assessment?**

*Answer: It is divided into the western Himalayas, north-west, north-east, northern-central region, eastern coast, western coast, and the interior plateau.*

**41. Q: What is the projected rise in annual mean surface air temperature in the 2030s?**

*Answer: The annual mean surface air temperature is projected to rise by 1.7°C to 2.0°C in the 2030s.*

**42. Q: How does temperature variability differ across seasons in the 2030s projections?**

*Answer: Seasons may be warmer by around 2.0°C, with more variability in winter months towards the 2030s.*

**43. Q: What is the projected increase in mean annual temperature for the Himalayan region in the 2030s?**

*Answer: The mean annual temperature in the Himalayan region is projected to increase from 0.9°C to 2.6°C in the 2030s.*

**44. Q: How does the mean annual temperature change in the North-Eastern region in the 2030s?**

*Answer: The mean annual temperature in the North-Eastern region is projected to rise from 25.8°C to 26.8°C in the 2030s.*

**45. Q: What temperature changes are projected for the Western Ghats in the 2030s?**

*Answer: Mean annual temperatures in the Western Ghats are likely to increase to 26.8°C–27.5°C in the 2030s.*

**46. Q: How is the coastal region affected in terms of mean annual air temperature in the 2030s?**

*Answer: In the eastern coastal region, mean annual air temperature is likely to rise from 28.7°C to 29.3°C in the 2030s.*

**47. Q: What challenges arise in demarcating the coastal region for assessment purposes?**

*Answer: Defining the coastal zone, covering 5,500km along the mainland and 20,000km along islands, poses a significant challenge.*

**48. Q: How does the assessment address uncertainties in modeling assumptions about population and socio-economic factors?**

*Answer: Climate projections account for a range of emissions scenarios and the uncertainty in relationships between population, socio-economic development, and technical changes.*

**49. Q: Why is a higher resolution model suggested for capturing regional details in India?**

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**57. Q: What limitations are associated with the InfoCrop model used for assessing agriculture productivity?**

Answer: The model doesn't consider socio-economic trends, technological improvements, and pests/disease scenarios, impacting the comprehensive assessment of agriculture.

**58. Q: What challenges are highlighted in using the IBIS model for assessing changes in vegetation in the 2030s?**

Answer: The model requires an extensive finely gridded database on soil, water, and climate parameters, which is challenging to assemble.

**59. Q: How does the SWAT model used for assessing water yields handle the absence of nationally generated data?**

Answer: Global sources are used for terrain, soil profile, and land use information, introducing potential limitations in the absence of national data.

**60. Q: How does the assessment suggest overcoming limitations in temperature projections for specific regions like the Himalayas and Western Ghats?**

Answer: The study suggests using a higher resolution model (at least 25km x 25km) for regions like the Himalayas and Western Ghats to capture fine-scale details.

**61. Q: Why is the study's determination of present water availability criticized in terms of man-made changes?**

Answer: The study assumes static man-made changes like dams and diversions for the future, which might not be realistic.

**62. Q: How does the study propose to address uncertainties in sea-level rise projections?**

Answer: Alternative approaches, semi-empirical in nature, based on past sea level and temperature data, are suggested to estimate sea-level rise.

**63. Q: What factors contribute to uncertainties in climate projections according to the assessment?**

Answer: Incomplete understanding of some processes in the carbon cycle, chemical reactions in the atmosphere, and feedbacks in the model contribute to uncertainties.

**64. Q: Why is a higher resolution model recommended for detailed projections in specific regions like the Western Ghats?**

Answer: The PRECIS model at 50km resolution is suitable for broad regions, but higher resolution (at least 25km x 25km) is necessary for detailed projections.

**65. Q: How does the assessment propose addressing data gaps in future climate projections?**

Answer: Running ensembles of future climate projections using the same model and emission scenarios can help reduce uncertainties.

**66. Q: What are the key limitations of the current physical climate models used by the IPCC for sea-level rise projections?**

Answer: The models assume a near-zero net contribution of Greenland and Antarctic ice sheets, contrary to observations of ice loss in recent decades.

**67. Q: Why are semi-empirical estimates of sea-level rise considered more accurate in some studies?**

Answer: Semi-empirical estimates are based on the proportional relationship between global warming and the rate of sea-level rise, incorporating observed data.

**68. Q: How does the assessment suggest improving the accuracy of vegetation type mapping in models like IBIS?**

Answer: Long-term observational plans, identifying vegetation types within 1km x 1km, are proposed to enhance the accuracy of vegetation mapping.

**69. Q: Why does the InfoCrop model exclude considerations of socio-economic trends in agriculture?**

Answer: The model focuses on climate impacts and lacks integration of socio-economic factors like technological improvements and market demand.

**70. Q: How does the assessment propose handling uncertainties in temperature and humidity projections for livestock productivity?**

Answer: The study uses temperature-humidity index (THI) projections to estimate livestock stress and productivity, acknowledging potential uncertainties.

**71. Q: What challenges arise in assessing the impact of climate change on coastal fisheries?**

Answer: Challenges include the need for accurate data on current fish productivity, climate, and sea parameters for comprehensive assessments.

**72. Q: How does the assessment propose addressing the lack of proper scientific data for integrating pest and disease scenarios in agriculture models?**

Answer: Integration is currently limited due to the lack of data, but there is a need for proper scientific data to enhance the accuracy of assessments.

**73. Q: Why is a scenario projection required for assessing man-made changes in water availability?**

Answer: Scenario projections can realistically capture trends in man-made changes like dams and diversions, which may not remain static in the future.

**74. Q: How does the assessment propose linking influential biophysical and socio-economic driving forces impacting agriculture?**

Answer: The study suggests working out comprehensive impacts by linking other influential factors indirectly impacted by climate change, like technological advancements and market demand.

**75. Q: Why is it necessary to develop a primary database on farm inputs applied by farmers on a fine-gridded level?**

Answer: A finely gridded database is necessary to improve the accuracy of simulation analysis, especially when assessing agriculture at a district level.

**76. Q: How does the assessment acknowledge the limitations of using default or approximate values in models like IBIS?**

Answer: Exploratory runs using default/approximate values in IBIS could only reproduce current vegetation patterns to a low level of accuracy, indicating the need for more precise data.

**77. Q: What role does the IPCC play in climate change assessments, according to the context?**

Answer: The IPCC provides climate change scenarios and models, but uncertainties in key assumptions and relationships contribute to challenges in climate projections.

**78. Q: What is the projected change in annual precipitation in the Himalayan region for the 2030s compared to the baseline (1970s)?**

*Answer: Annual precipitation in the Himalayan region is expected to increase by 5% to 13% in the 2030s.*

**79. Q: How does the mean annual rainfall vary in the North-Eastern region in the 2030s, and what is the projected change with respect to the 1970s?**

*Answer: Mean annual rainfall in the North-Eastern region may vary from 940±149mm to 1330±174.5mm, with a projected increase of 0.3% to 3% in the 2030s.*

**80. Q: What are the projected variations in mean annual rainfall in the Western Ghats for the 2030s compared to the 1970s?**

*Answer: Mean annual rainfall in the Western Ghats is likely to increase by 6%–8% in the 2030s compared to the 1970s.*

**81. Q: How does extreme precipitation vary in the Himalayan region, and what is the expected change in intensity in the 2030s?**

*Answer: In the Himalayan region, the number of rainy days may increase by 5–10 days, and intensity may rise by 1–2mm/day in the 2030s.*

**82. Q: What is the projected change in extreme precipitation events along the entire western coast, including the Western Ghats?**

*Answer: The number of rainy days may decrease, but intensity is likely to increase by 1–2mm/day in the Western Ghats region.*

**83. Q: How have cyclone frequencies along the eastern and western coasts changed since 1986, and what is the projection for the 2030s?**

*Answer: Since 1986, cyclone frequencies decreased along the eastern coast, with a projected overall decrease in cyclonic disturbances along both coasts in the 2030s.*

**84. Q: How do storm surge return periods change along the eastern coast in the 2030s, and what exceptions are observed in Sagar and Kolkata?**

*Answer: Storm surge return periods may increase by 15% to 20% along the eastern coast, except for Sagar and Kolkata, where the increase is less than 5%.*

**85. Q: What are the two main processes contributing to global sea-level change, and what is the observed average rate of sea-level rise along the Indian coast?**

*Answer: Thermal expansion and water exchange with other reservoirs contribute to sea-level change. The observed rate along the Indian coast is about 1.3mm/year.*

**86. Q: How is apple production in the Himachal Pradesh region affected by increasing temperatures, and what trend is observed in chilling hours?**

*Answer: Increasing temperatures have led to decreased apple production, with a decline of more than 9.1 chilling units per year in the last 23 years.*

**87. Q: How does livestock productivity in the Western Ghats respond to increased Temperature Humidity Index (THI) in the 2030s?**

*Answer: Livestock in the Western Ghats is expected to face severe thermal discomfort, impacting productivity with an increase in THI above 80.*

**88. Q: What is the projected impact of climate change on coconut yields in coastal regions, and what factors contribute to these changes?**

*Answer: Coconut yields may increase up to 30% due to projected rainfall increase and moderate temperature rise, but some areas may experience yield reduction.*

**89. Q: How do extreme temperatures change in the Himalayan region, and what are the projected increases in minimum and maximum temperatures?**

*Answer: Minimum temperatures may rise by 1°C to 4.5°C, and maximum temperatures may increase by 0.5°C to 2.5°C in the Himalayan region.*

**90. Q: What impact does climate change have on rice yields in the North-Eastern region, and how do irrigated and rain-fed rice differ in their responses?**

*Answer: Irrigated rice yields may range between –10% and 5%, while rain-fed rice yield may vary between –35% to 5%, with respect to the 1970s.*

**91. Q: How does the study define extreme precipitation events, and what changes are projected in the number of rainy days and rainfall intensity in the Western Ghats?**

*Answer: Extreme precipitation is defined based on exceeding observed average rainy days and rainfall volume. In the Western Ghats, rainy days may decrease, but intensity may increase.*

**92. Q: What changes are projected in the Net Primary Productivity (NPP) of the Western Ghats, Himalayan region, Coastal region, and North-Eastern region in the 2030s?**

*Answer: NPP is projected to increase by 20% in the Western Ghats, 57% in the Himalayan region, 31% in the Coastal region, and 23% in the North-Eastern region.*

**93. Q: How are the forest vegetation types of eco-sensitive regions vulnerable to projected climate change in the 2030s?**

Answer: Forest vegetation types in eco-sensitive regions

**94. Q: What is the projected change in sea-level rise along the Indian coasts in the 2030s based on global projections?**

*Answer: Global projections estimate a first approximation of sea-level rise along the Indian coasts in the next few decades.*

**95. Q: How does extreme precipitation vary in the North-Eastern region, and what is the projected change in the number of rainy days and rainfall intensity?**

*Answer: In the North-Eastern region, the number of rainy days may decrease by 1–10 days, while intensity could increase by 1–6mm/day.*

**96. Q: What is the expected change in the frequency of cyclonic disturbances along the eastern and western coasts in the 2030s?**

*Answer: Cyclonic disturbances are projected to decrease along both coasts in the 2030s.*

**97. Q: How are livestock productivity and fisheries impacted in the Coastal region due to climate change in the 2030s?**

*Answer: Livestock productivity faces adverse impacts with increased THI, and fisheries may experience changes in catch distribution.*

**98. Q: What are the observed trends in the recruitment and catches of oil sardines along the coastal region, and what factors influence them?**

*Answer: Oil sardine recruitment and catches may increase due to warming, elevated Sea Surface Temperature (SST), and favorable wind conditions.*

**99. Q: How is the number of rainy days and intensity expected to change in the Western Ghats, especially in the Karnataka region?**

*Answer: In the Western Ghats, the number of rainy days may decrease, but intensity is likely to increase by 1–2mm/day, with variations in Karnataka.*

**100. Q: What is the expected change in extreme temperatures in the Coastal region, and how do minimum and maximum temperatures differ?**

*Answer: Minimum temperatures may rise by 2.0°C to 4.5°C, and maximum temperatures may increase by 1°C to 3.5°C in the Coastal region.*

**101. Q: How does the intensity of extreme precipitation events change in the Coastal region, and what areas might experience an increase in rainfall?**

*Answer: Rainy days may decrease by 1–5 days, but intensity is likely to increase between 1mm/day and 4mm/day, with slight increases along the Orissa coast.*

**102. Q: What is the projected impact of climate change on maize and sorghum yields in the Coastal region, both irrigated and rain-fed?**

*Answer: Climate change is likely to reduce yields of irrigated maize by 15% to 50%, and rain-fed maize by up to 35%.*

**103. Q: How has the temperature trend affected apple production in the Himachal Pradesh region, and what months experience the most significant decline in chilling hours?**

*Answer: Increasing temperatures led to a decline in apple production, especially during the months of November and February.*

**104. Q: In the Himalayan region, what percentage of forest grids is projected to undergo change in the 2030s, and what is the expected change in Net Primary Productivity (NPP)?**

*Answer: About 56% of forest grids may undergo change, with an average projected increase in NPP of about 57% in the Himalayan region.*

**105. Q: What is the projected change in annual temperature in the Western Ghats, North-Eastern region, and Coastal region in the 2030s?** *Answer: Annual mean surface air temperature is projected to rise by 1.7°C to 2.0°C in the 2030s in these regions.*

**106. Q: How does the THI impact livestock productivity in the North-Eastern region, and during which months is it likely to be highest?**

*Answer: THI is likely to increase, leading to severe thermal discomfort of livestock, especially during April–October in the 2030s.*

**107. Q: How does the frequency of rainy days change in the Western Ghats, especially in the Karnataka region?**

*Answer: The number of rainy days may decrease, but intensity is likely to increase by 1–2mm/day, with variations in Karnataka.*

**108. Q: How does climate change impact human health in the studied regions?**

*Answer: Morbidity and mortality are likely to increase due to direct effects like heat stress and indirect effects such as vector-borne diseases.*

**109. Q: What is the conclusion regarding malaria transmission windows in the Himalayan region based on temperature and humidity projections?**

*Answer: Malaria transmission windows are projected to increase in Jammu and Kashmir but remain open for 0–2 months in the 2030s.*

**110. Q: How does the transmission of malaria change in the North-Eastern region, and what factors contribute to this change?**

*Answer: Malaria transmission windows may increase for 7–9 months, possibly up to 10–12 months, influenced by high relative humidity.*

**111. Q: What is the projection for malaria transmission in the Western Ghats, and how does it compare to the current scenario?**

*Answer: Malaria transmission in the Western Ghats is expected to remain unchanged, open for 10–12 months in a year.*

**112. Q: In the Coastal regions, what changes are projected for malaria transmission, especially in terms of the number of months open for transmission?**

*Answer: Malaria transmission in coastal areas may experience a 34% reduction in the number of months open for transmission.*

**113. Q: How is water yield expected to change in the Himalayan region, and what factors contribute to this change?**

*Answer: Water yield in the Himalayan region is likely to increase by 5%–20%, influenced by precipitation, evapotranspiration, and soil characteristics.*

**114. Q: What spatial variability in water yield is observed in the North-Eastern region, and how does it relate to precipitation and evapotranspiration patterns?**

*Answer: Water yield in the North-Eastern region shows spatial variability, with reductions up to 20% in Arunachal Pradesh and increases in Assam and Manipur.*

**115. Q: How does the Western Ghats region exhibit variability in water yield in the 2030s?**

*Answer: The northern part may experience a 10%–50% decrease, the central part an increase of 5%–20%, and the southern part a decrease of up to 10%.*

**116. Q: What is the general trend in water yield in the eastern coastal region, and how does it differ from the western coastal region?**

*Answer: The eastern coastal region shows a reduction in water yield by up to 40%, while the western coastal region varies, with Karnataka showing an increase of 10%–20%.*

**117. Q: How is the frequency of droughts expected to change, and what index is used to define the drought scenario?**

*Answer: There is an increase in the severity of drought, especially in the Himalayan region, based on the Soil Moisture Deficit Index (SMDI).*

**118. Q: How are floods projected using the SWAT model, and what regions show a significant change in flood magnitudes?**

*Answer: Floods, exceeding 99th percentile flow, may increase from 10% to over 30% in various regions, impacting existing infrastructure.*

**119. Q: What is the recommended approach for addressing data gaps in climate change research?**

*Answer: Efforts are needed to establish an effective mechanism for sharing and accessing climate, ecosystem, water, agriculture, and socio-economic data.*

**120. Q: How can systematic observations be improved, especially concerning forest vegetation types and soil characteristics?**

*Answer: New long-term systematic observations are essential for gathering data on forest vegetation types and soil characteristics.*

**121. Q: Why is accessing multiple regional climate models with higher resolution important for impact assessments?**

*Answer: Multiple models, validated by observed climate, can reduce uncertainty, providing a clearer picture of GHG emission trends and climate behavior.*

**122. Q: What is the importance of building capacity in climate change research in India?**

*Answer: Rapid capacity building is essential for enhanced research on climate modeling, impact assessment, mitigation, and adaptation.*

**123. Q: How can scientific cooperation and collaboration contribute to climate change research in India?**

*Answer: Extensive networking and collaboration can create a critical mass of researchers, advancing science, impact assessment, and adaptation efforts.*

**124. Q: What is the significance of making a pan-Indian regional assessment for informed policy-making?**

*Answer: Regional assessments can provide insights into the specific impacts of climate change on economic activities, aiding state-level action plans.*

**125. Q: How can state-level assessments contribute to climate change action plans in India?**

*Answer: State-level assessments help develop specific action plans for adapting to climate change, considering the unique requirements of each state.*

**126. Q: What is the observed trend in apple production in the Himachal Pradesh region, and how is it related to temperature changes?**

*Answer: Increasing temperatures have led to a decline in apple production, especially during the months of November and February.*

**127. Q: What is the expected impact of climate change on the frequency of vector-borne diseases in the Himalayan region?**

Answer: Warming temperatures may lead to an increase in vector-borne diseases in the Himalayan region.

**128. Q: How does the projection for water yield in the North-Eastern region differ from the central to northern parts?**

Answer: While the central parts may see increased water yield, the northern parts may experience a reduction of up to 12%.

**129. Q: In the Coastal regions, what specific changes are expected in the 2030s concerning the reduction in water yield?**

Answer: Coastal areas, especially the east coast, may see a reduction in water yield by up to 34% in the 2030s.

**130. Q: What does the increase in severity of drought in the Himalayan region imply for water resources?**

Answer: Despite an overall increase in precipitation, the Himalayan region may face more severe drought conditions in the future.

**131. Q: How does the Soil Moisture Deficit Index (SMDI) help in assessing the spatial distribution of droughts?**

Answer: SMDI is used to define drought scenarios, indicating areas where soil moisture deficit may lead to drought development.

**132. Q: Which regions are projected to have a significant increase in flood magnitudes, posing a threat to existing infrastructure?**

Answer: Various regions may experience a 10% to over 30% increase in flood magnitudes, impacting infrastructure like dams and bridges.

**133. Q: Why is it crucial to have long-term systematic observations in India, especially for forest vegetation?**

Answer: Long-term observations are essential to understand the effects of climate on forest vegetation, aiding in modeling and conservation efforts.

**134. Q: How can multiple regional climate models contribute to a more accurate understanding of climate change impacts?**

Answer: Multiple models, validated with observed climate data, provide a more accurate understanding of the trajectory of climate change and its impacts.

**135. Q: What is the potential impact of climate change on water resources in the eastern coastal region of India?**

Answer: The eastern coastal region may face up to a 40% reduction in water yield in the 2030s, affecting water resources.

**136. Q: How can the reduction in water yield in the coastal region impact agriculture and other economic activities?**

Answer: Reduced water yield may adversely affect agriculture and other economic activities dependent on water resources in the coastal region.

**137. Q: What steps can be taken to bridge the significant data gap in interdisciplinary climate change research?**

Answer: Establishing an effective mechanism for sharing and accessing diverse data sets is crucial to bridge the data gap.

**138. Q: Why is the validation of regional climate models important for accurate impact assessments in India?**

Answer: Validation ensures that regional climate models accurately simulate observed climate conditions, reducing uncertainties in impact assessments.

**139. Q: How does the reduction in water yield in the western coastal region compare to the increase in specific areas?**

Answer: While the western coastal region may experience a general reduction, Karnataka may see an increase of 10%–20% in water yield.

**140. Q: What is the role of the Forest Survey of India (FSI) in addressing the data gap related to forest observation plots?**

Answer: FSI is making efforts to revive forest observation plots, which are crucial for gathering data on vegetation types and soil characteristics.

**141. Q: Why is it essential to focus on state-level assessments for developing climate change action plans in India?**

Answer: State-level assessments provide tailored insights for developing specific action plans, considering the unique climate challenges of each state.

**142. Q: How can state-specific climate change action plans contribute to overall climate resilience in India?**

Answer: State-specific action plans address local vulnerabilities, enhancing overall climate resilience and adaptive capacity.