

Minutes of the Ninth Meeting of the "Group on Financial Aspects under Task Force for Interlinking of Rivers" held on 01.05.2018 in the Committee Room of NWDA, Palika Bhawan, New Delhi.

The Ninth meeting of the "Group on Financial Aspects under Task Force for Interlinking of Rivers" was held under the Chairmanship of Dr. Prodipto Ghosh, former Secretary to Govt. of India and Chairman of the Group on 01.05.2018 (Tuesday) at 11.30 A.M. in the Committee Room of NWDA, Palika Bhawan, New Delhi. List of Members and other participants is enclosed as **Annex-I**.

At the outset, the Chairman welcomed all the Members, Special Invitees and other participants. He expressed his pleasure over participation of Shri Avinash Mishra, Joint Adviser (WR&LR) as representative of NITI Aayog, after a long time. Further he expressed the hope that we would have long awaited presentation from him. He then requested Member Secretary of the Group to take up the agenda item for discussion.

Item 9.1: Confirmation of minutes of the Eight Meeting of the Group on Financial Aspect held on 18.04.2018

The Member Secretary informed that the minutes of the eighth meeting of the Group on financial aspects were circulated among the Members/Special Invitee circulated by email on dated 29.04.2018. Though the Members/Special Invitees could not get sufficient time to go through the minutes, since no comments were received from any of them till then, it was considered appropriate to confirm the minutes of the eighth meeting provisionally as circulated. Members/Special Invitees may offer their comments/suggestions, if any, before the next meeting.

Item 9.2.1: Presentation by NITI Aayog on projection of fiscal resources

Shri Avinash Mishra, Joint Adviser (WR&LR), NITI Aayog informed that he was not aware of the presentation to be made by him on behalf of NITI Aayog as he was attending the meeting for the first time. As such, on his request, this item was deferred for the next meeting.

Item 9.2.2: Presentation by Yes Bank on projections of possible flow of funds for the ILR programme from Indian Banks/ Financial Institutions,

The representative of Yes bank informed that the desired/useful inputs were yet to be received by them from other agencies. As such they could not modify their presentation as suggested in the seventh/eighth meeting. This item was also deferred for the next meeting. The Chairman assured him of co-operation in this regard.

Item 9.2.3: Potential for declaration of ILR Project as Climatic Change Adaptation and Mitigation Projects and due diligence requirements there on

Prof. Gosain, IIT Delhi, made a Power Point Presentation on "ILR Projects versus Building Climate Change Resilience" (Annexure-9.2). The presentation was mainly on impact of Climate Change on water resources and how the water resources projects/ILR projects may be considered as Climate Change adaptation and mitigation projects.

He indicated that due to Climate Change reduction in number of rainy days in a year and higher intensity of rainfall have been observed resulting in frequent and more intense floods, higher erosion rates, and about 60% of rain fed irrigated area is under threat.

While suggesting possible adaptation options, following points were suggested:

- (i) To create more storages
- (ii) Manage the storages efficiently & effectively
- (iii) Implement real-time flood forecasting systems
- (iv) The overall goal should be to restore the hydrological & environmental health of the river basins for sustainability

When phenomenon of climate change had not started, the major part of the country used to get rains during four months of southwest monsoon spread over 120 days, roughly, from Mid-June to Mid-October. Now due to impact of climate change, the number of rainy days have further reduced to 60 days and the rains have become more intense. Accordingly creation of more storage is necessary. Shri M.K.Sinha mentioned that the ILR projects are planned based on two basic principles of (i) to store water in dams where there it is surplus and (ii) to divert this water to the needy/ drought prone area through canals. Creation of storages will moderate/reduce the impact of floods while diversion of water through canals will mitigate the impacts of drought in water scarce area. EIA studies carried out in respect of various ILR Projects would also restore the hydrological & environmental health of the river basins for sustainability. So ILR projects can be strongly recommended as Climate change Adaptation Projects, subject to necessary due diligence of this aspect in respect of each link/subsystem of links.

Shri Satish Rao desired to know whether managing existing storages reservoirs effectively and efficiently would not serve the purpose. Shri Sinha explained that food grain production required for the projected population of the country in the year 2050 is 450 million tons for which we require 160 million hectare of cultivable area under assured irrigation. However the country's ultimate irrigation potential as on date is 140 million hectare only. The ILR programme can only bring additional 20 million hectare area under assured irrigation. So managing existing storages effectively and efficiently may improve the situation but would not completely fulfill the projected requirement. The Chairman of the Group was of the view that food habits of the people are fast changing and the projected food grain requirement may also get changed. He suggested Prof. Gosain to prepare 1000 word note on the theme for inclusion in the main Report.

Item 9.3.1 : Review of progress of work of the Group and to draw up a work programme for completion of its tasks.

After detailed deliberation, the following decisions were taken:

- (i) NITI Aayog to make a presentation in the next meeting on Government funding for such infrastructure projects, and what should be Govt. of India contribution for these projects, as well as policy decisions bearing on private sector and external funding. Special attention should be given to five prioritized ILR projects.

- (ii) Prof. Gosain, IIT, Delhi to prepare a note on the theme “ ILR as Climate change adaptation and mitigation Project” in about 1000 words for inclusion in the main Report.
- (iii) A Presentation is to be made by Shri Satish Rao for funding pattern of these links considering period of completion as 10 years for five prioritized projects in the next meeting.
- (iv) Presentation by YES bank on Projection of possible flow of funds for the ILR programme from Indian Banks/ Financial Institutions.

Item 9.4: Any other matter(s) with the permission of the Chair.

The Chairman congratulated Shri M.K. Srinivas on taking over the charge of Director General, NWDA and welcomed him in the meeting. While discussing the priority links, Shri Srinivas explained the need of Mahanadi-Godavari and Godavari (Akinpalli)-Cauvery link in place of nine link system of Peninsular Component.

The meeting ended with vote of thanks to the Chair.

List of Members, Special Invitees and other participants of the Ninth meeting of the “Group on Financial Aspects under Task Force for Interlinking of Rivers” held on 1st May, 2018 at New Delhi.

1.	Dr. Prodipto Ghosh, Former Secretary to Govt. of India & Member of Task Force for ILR and Distinguished Fellow, TERI, New Delhi	In Chair
2.	Shri H. Satish Rao, (Retd.) Director General, ADB, Bengaluru	Member
3.	Shri R. K. Jain, Chief Engineer, NWDA, New Delhi	Member
4.	Shri Avinash Mishra, Joint Adviser (WR), NITI Aayog, New Delhi	Member
5.	Shri M. K. Mittal, Director (Finance), NHPC, Faridabad	Member
6.	Shri Bhupesh Rathore, President, Strategic Govt. Advisory, Yes Bank Ltd., New Delhi	Representing Shri Rana Kapoor, Managing Director and CEO, Yes Bank Ltd., Mumbai
7.	Shri K. P. Gupta, Director Tech., NWDA, New Delhi	Member-Secretary
8.	Shri M. K. Srinivas, Director General, NWDA, New Delhi	
9.	Prof.(Dr.) A. K. Gosain, Professor, Department of Civil Engineering, IIT, New Delhi	Special Invitee
10.	Shri M.K. Sinha, Assessor, Krishna Water Disputes Tribunal &Former Chief Engineer, CWC, New Delhi	Special Invitee
11.	Shri R. K. Pachauri, Chief Engineer (PPO), CWC, New Delhi	Special Invitee
	Other Officers	
12.	Shri Anil Kumar Jain, Deputy Director(SCILR), NWDA, New Delhi	
13.	Shri R. K. Agrawal, Consultant, NWDA, New Delhi	
14.	Shri Pranay Ranjan, Sr. Vice President -CF, Yes Bank Ltd., New Delhi	
15.	Shri Chandan Sinha, Vice President, YES Bank Ltd. (SGA), New Delhi	
16.	Shri Dasari Srinivasa Praveen, Manager, CFIB, YES Bank Ltd., New Delhi	
17.	Smt. Namrata S Panwal, YP (WR&LR), NITI Aayog, New Delhi	

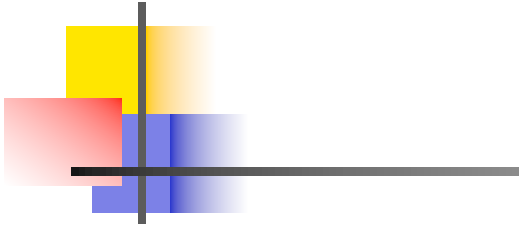
ILR Projects Vs Building Climate Change Resilience

Ashvani Kumar Gosain

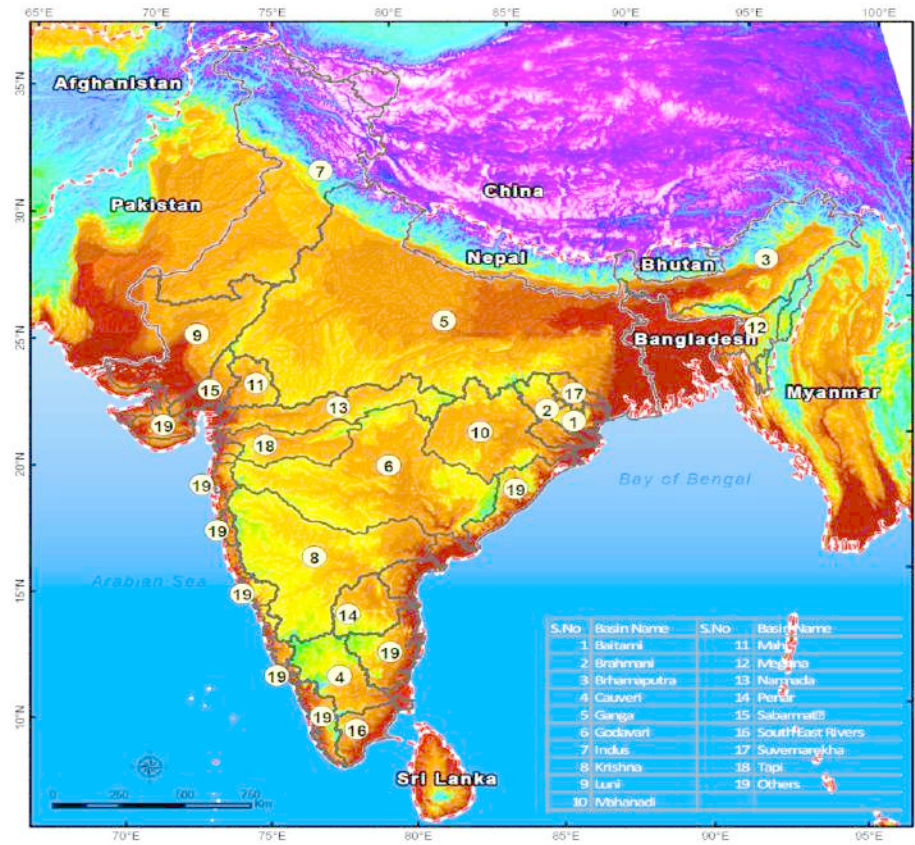
Professor, Civil Engineering Department
Indian Institute of Technology Delhi



River Basins Modeled– NATCOM



Index map of River Basins used for Hydrological Modelling

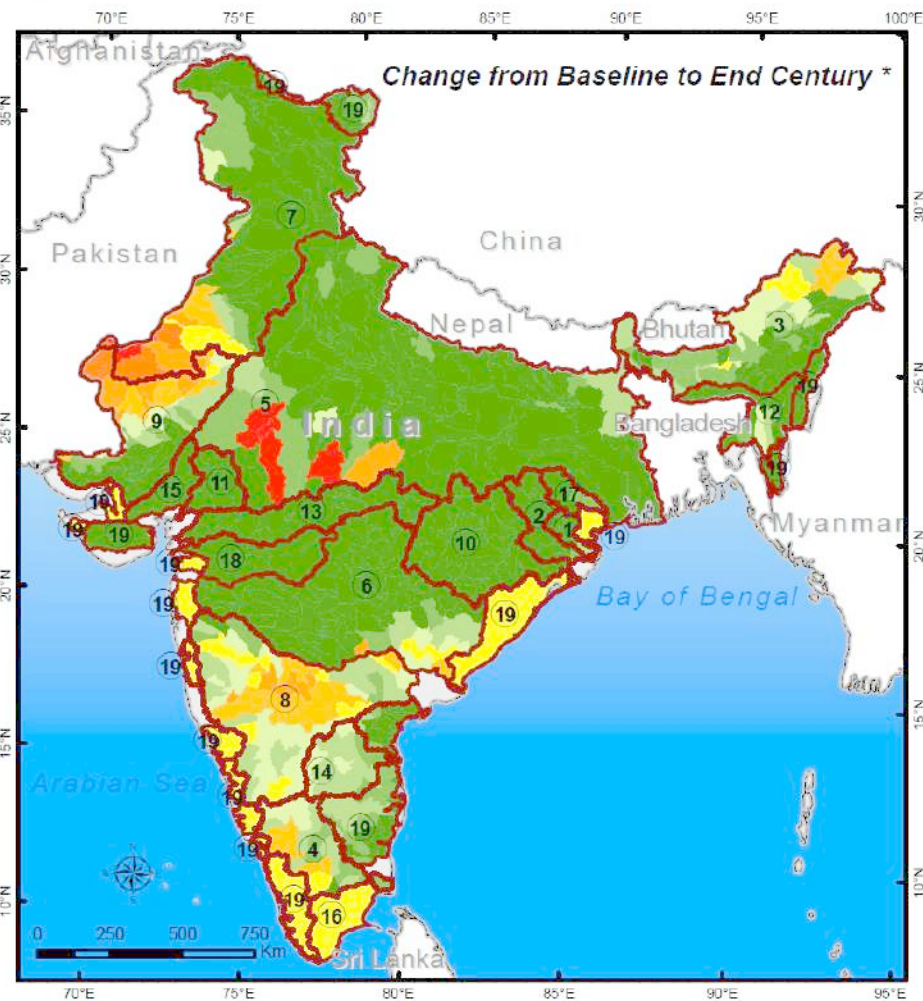
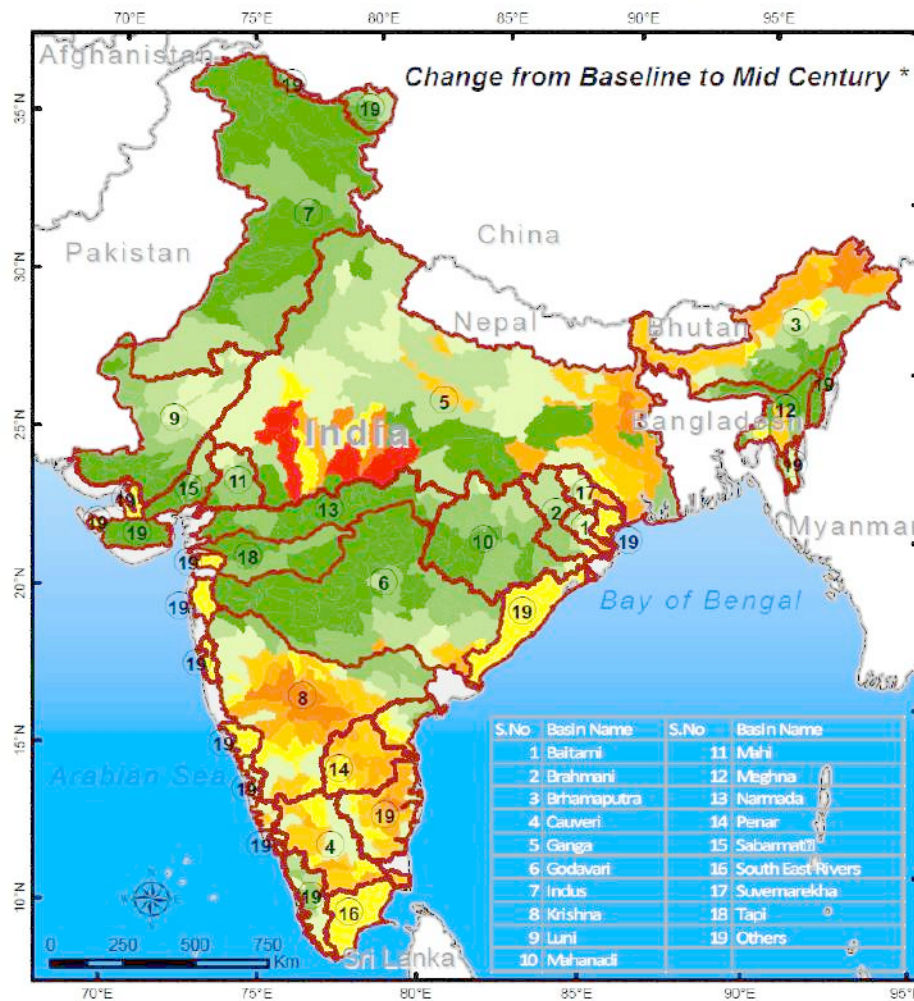




Modelling Outcomes

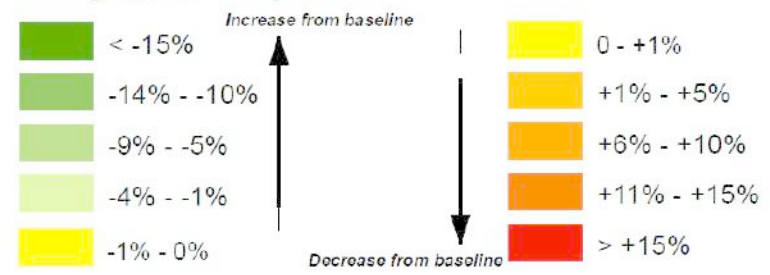
- n Detailed outputs include all the water balance component at spatial and temporal scales which are analyzed for
 - n Changes in magnitude and frequency of flood peaks
 - n Severity of droughts
 - n Changes in flow patterns
 - n Changes in groundwater recharge

Percent Change in Precipitation across India



Change % in Precipitation

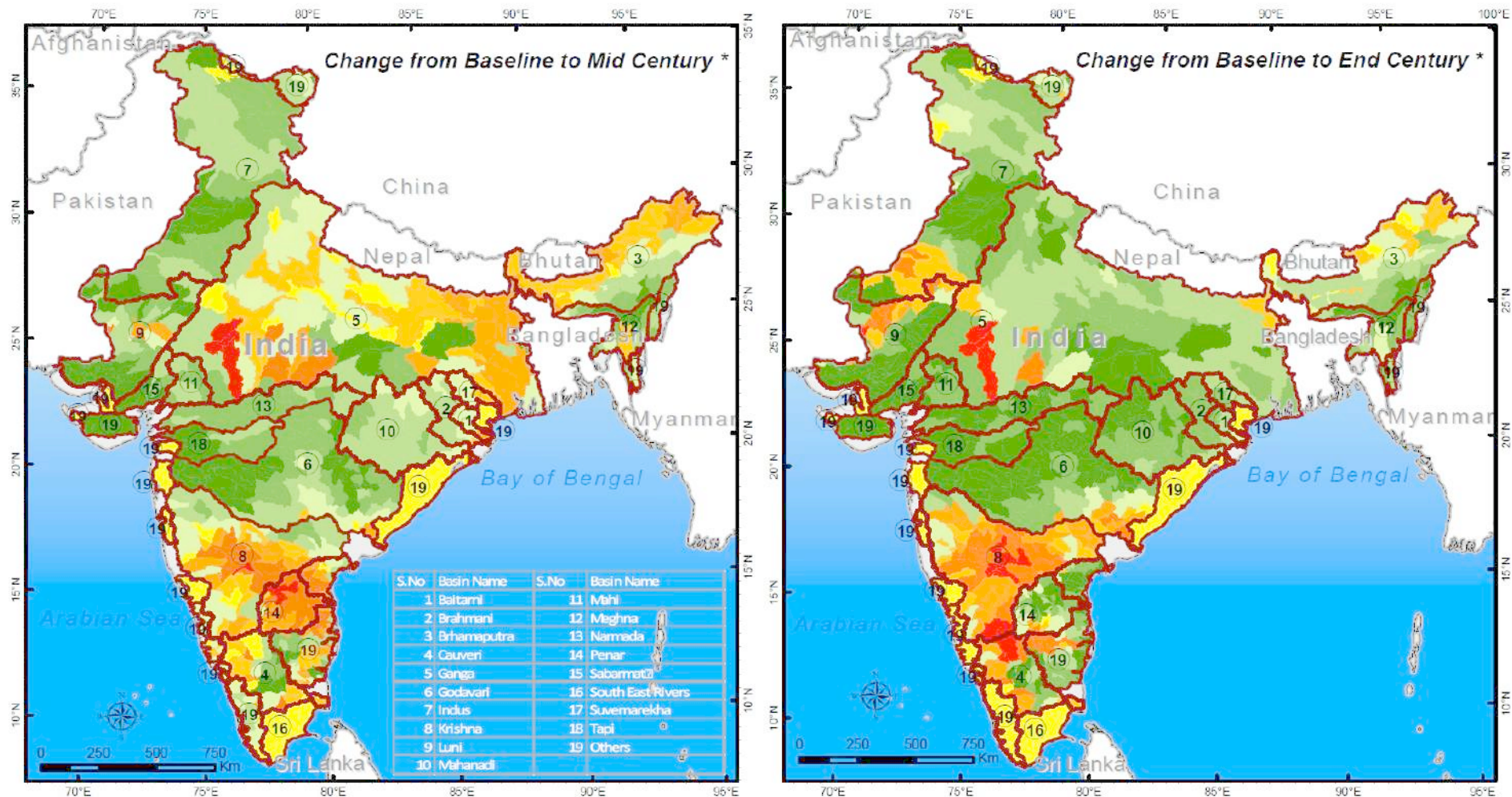
- Basin Boundary
- International Boundary
- Ocean



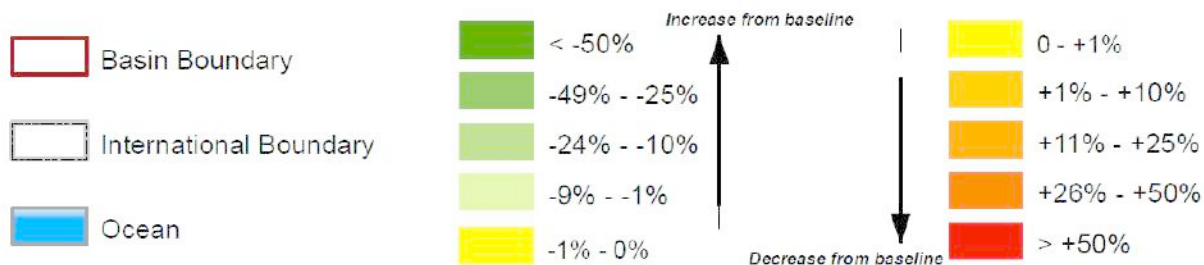
SWAT hydrological model results simulated using PRECIS RCM* daily weather datasets provided by the Indian Institute of Tropical Meteorology, Pune

* IPCC SRES A1B Scenarios (Q14 QUMP ensemble) - Baseline (1961-1990), Mid Century (2021-2050) & End Century (2071-2098)

Percent Change in Water Yield across India



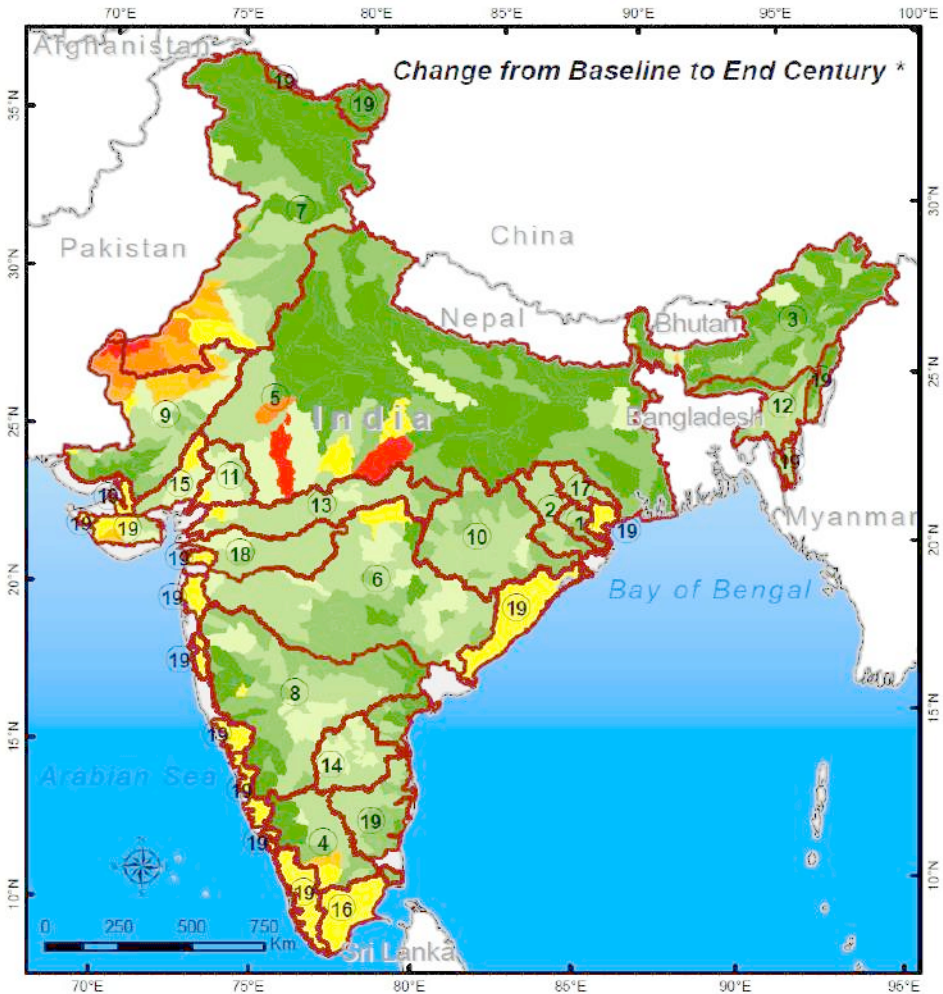
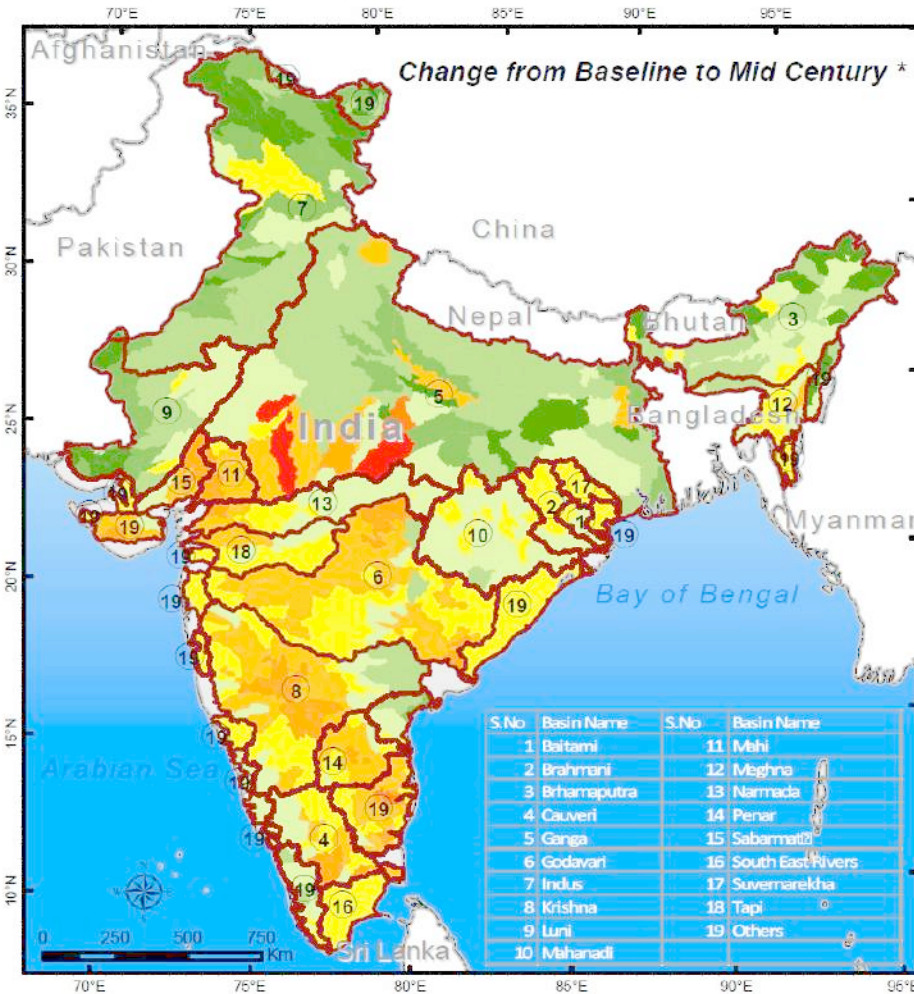
Change % in Water Yield



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Percent Change in Actual Evapotranspiration across India

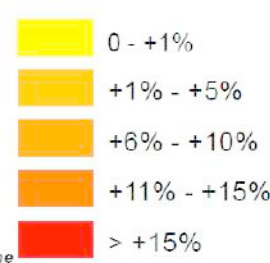


Change % in Actual Evapotranspiration

Basin Boundary

International Boundary

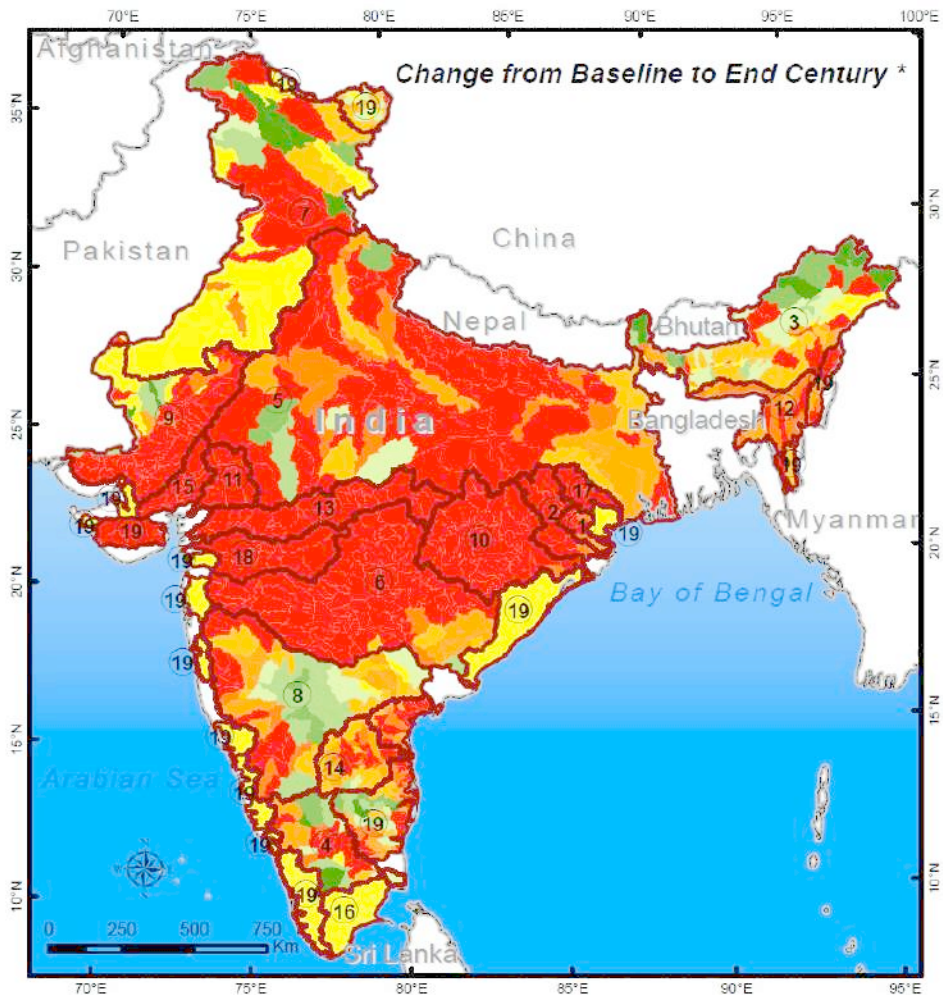
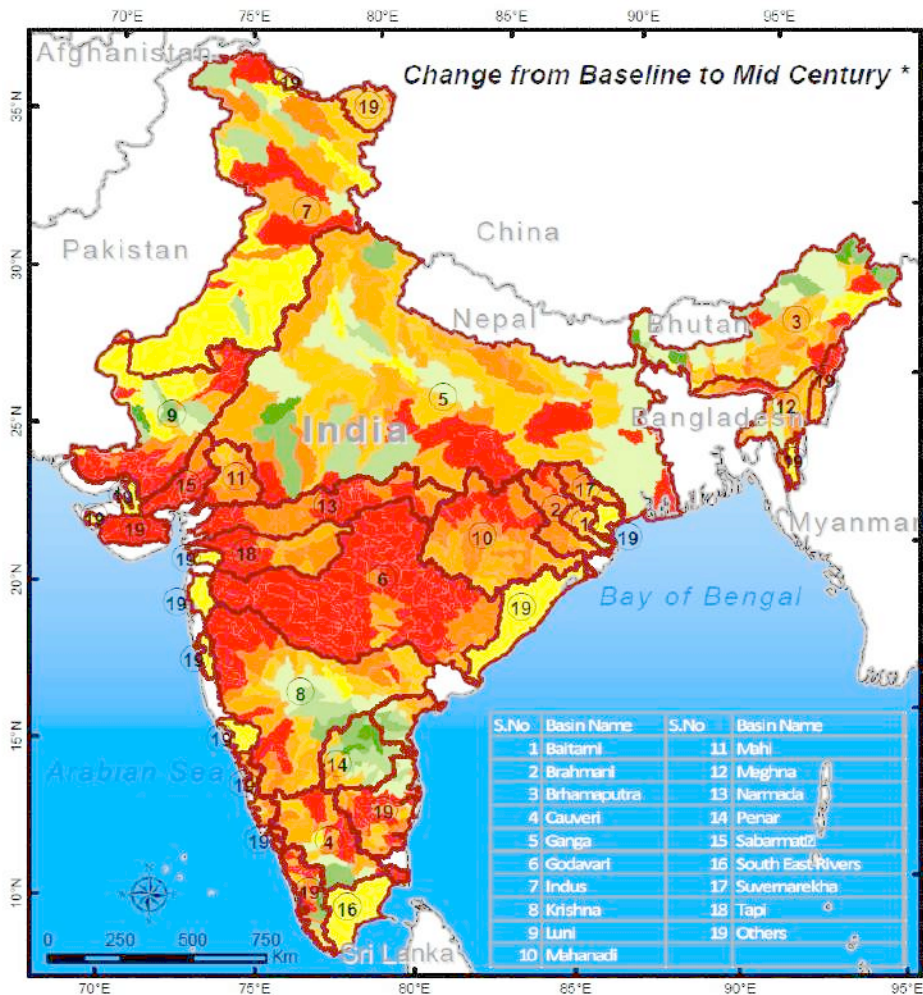
Ocean



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Percent Change in Sediment Yield across India

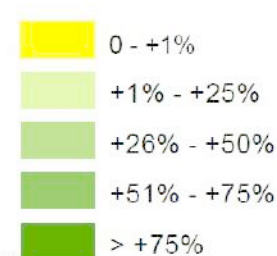
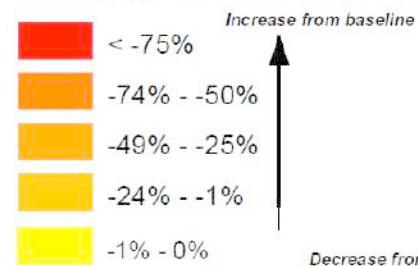


Change % in Sediment Yield

Basin Boundary

International Boundary

Ocean

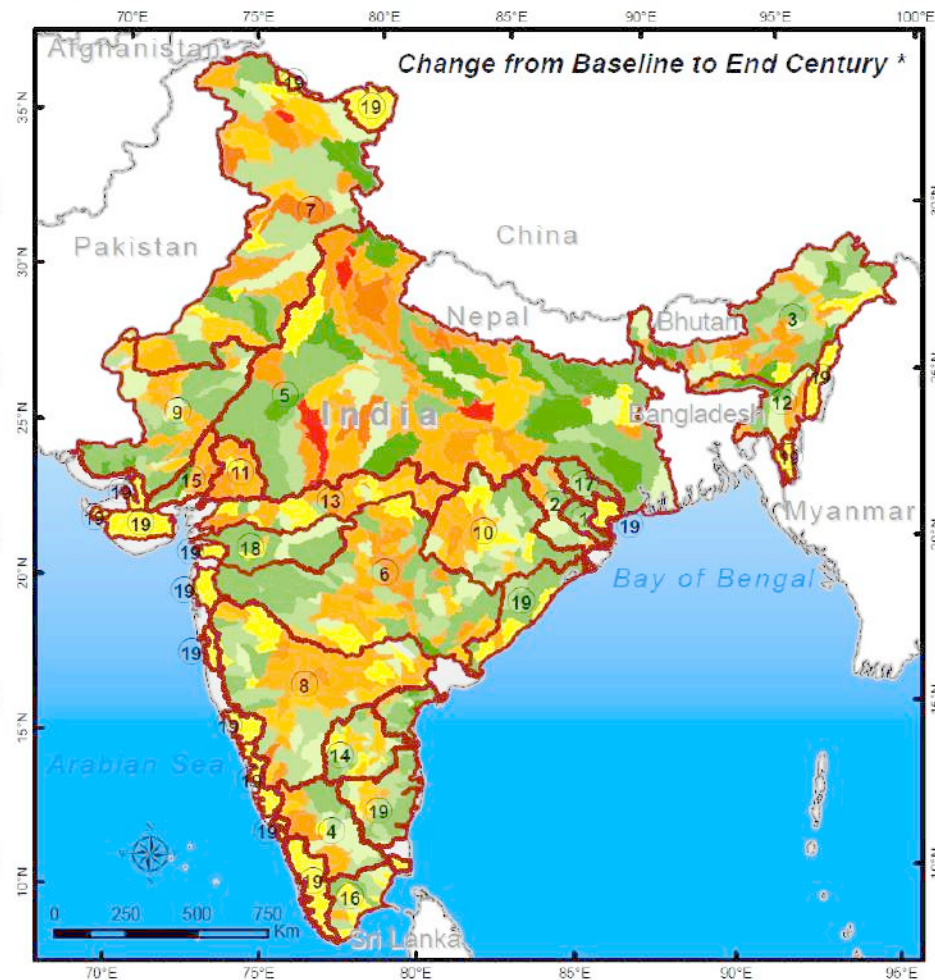
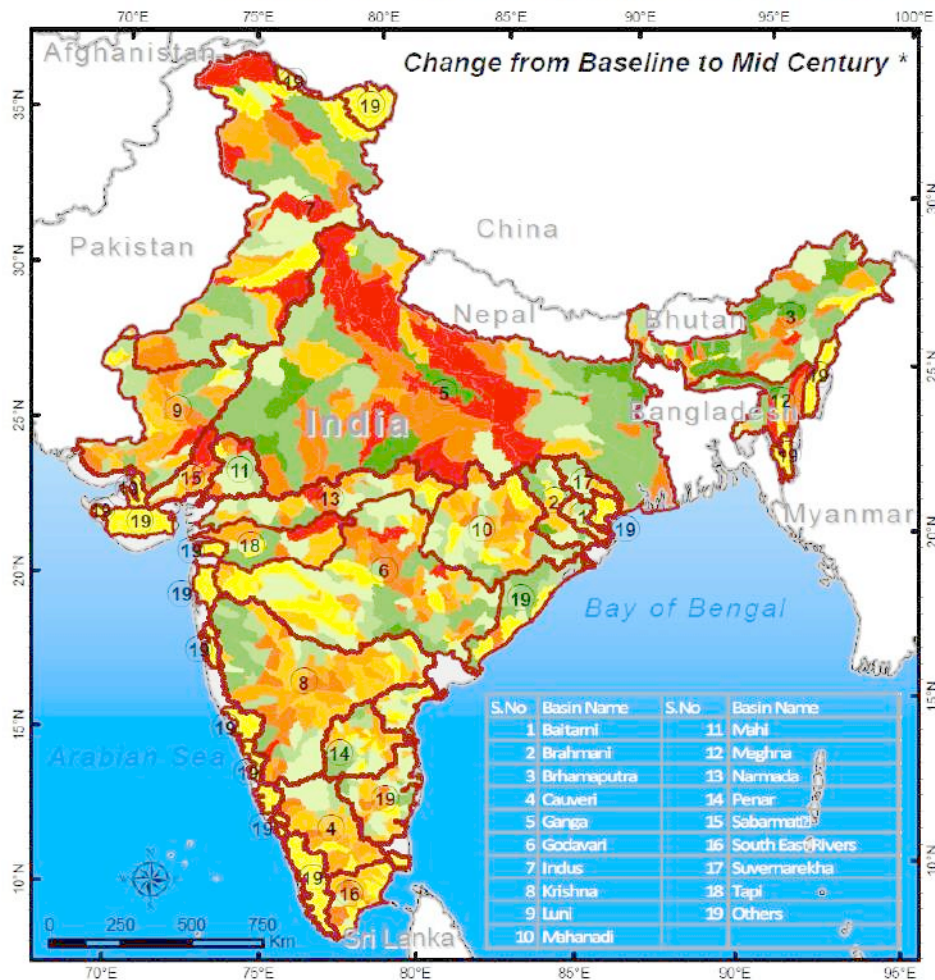


SWAT hydrological model results simulated using PRECIS RCM* daily weather datasets provided by the Indian Institute of Tropical Meteorology, Pune

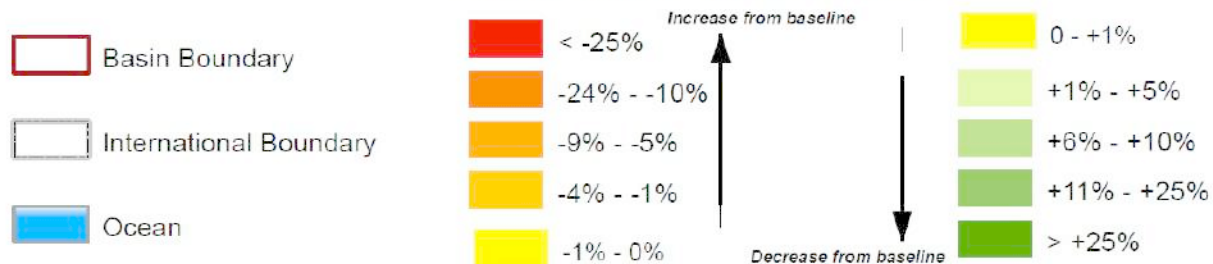
* IPCC SRES A1B Scenarios (Q14 QUMP ensemble) - Baseline (1961-1990), Mid Century (2021-2050) & End Century (2071-2098)

Percentage Change in Drought Weeks (JJAS) across India

Based on Agriculture Drought Index ranging from -2 to -4 (moderate to extreme soil moisture stress during critical growth stages of crops)



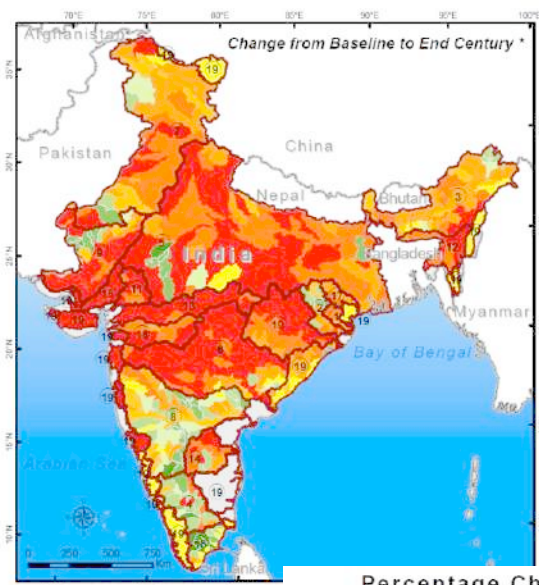
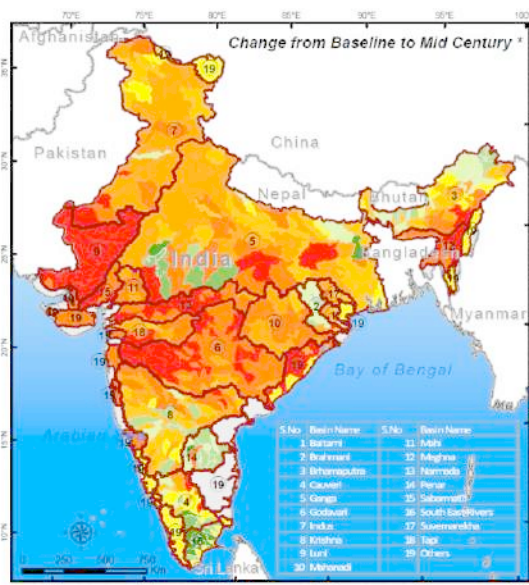
Change % in Drought Weeks (JJAS)



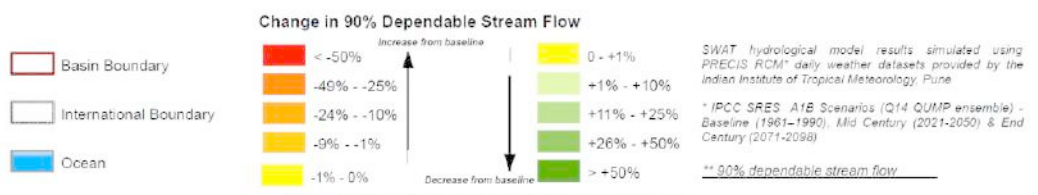
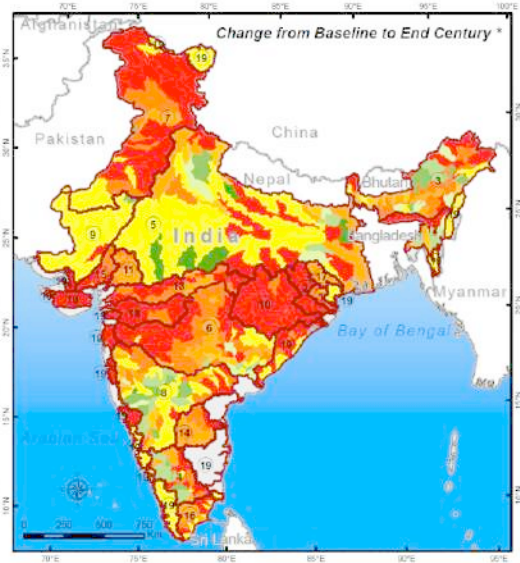
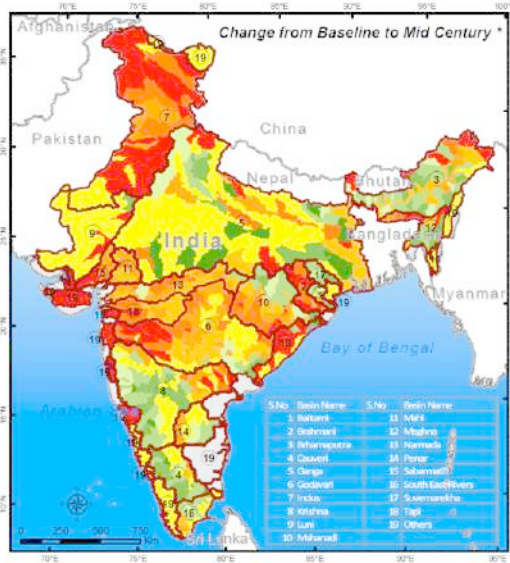
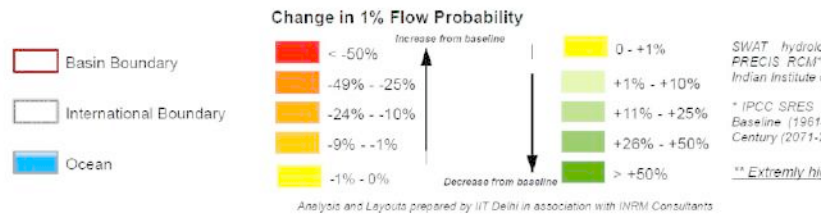
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Percentage Change in Stream Discharge at 99th percentile** across India



Percentage Change in Stream Discharge at 10th percentile** across India



Issues around Development

- n How much development?
- n Water resource is finite
- n Any development big or small results in moving the water around (more often upstream)
- n Every development/intervention has associated impact

Monday, April 30,
2018

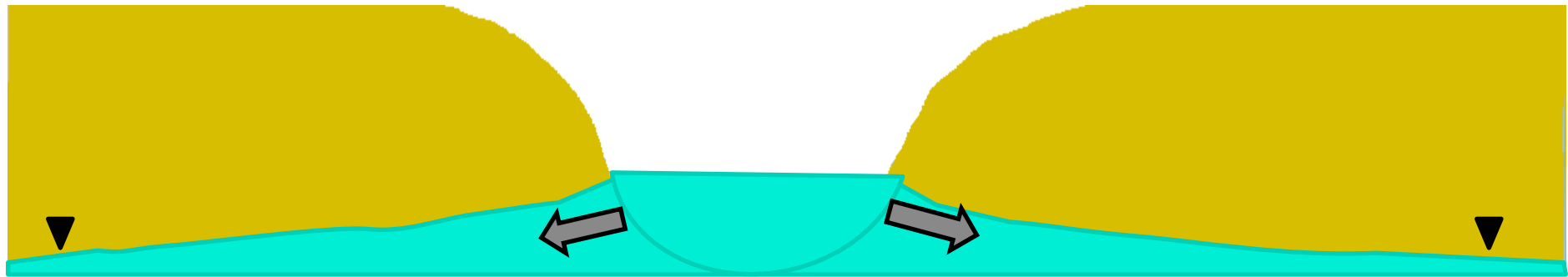
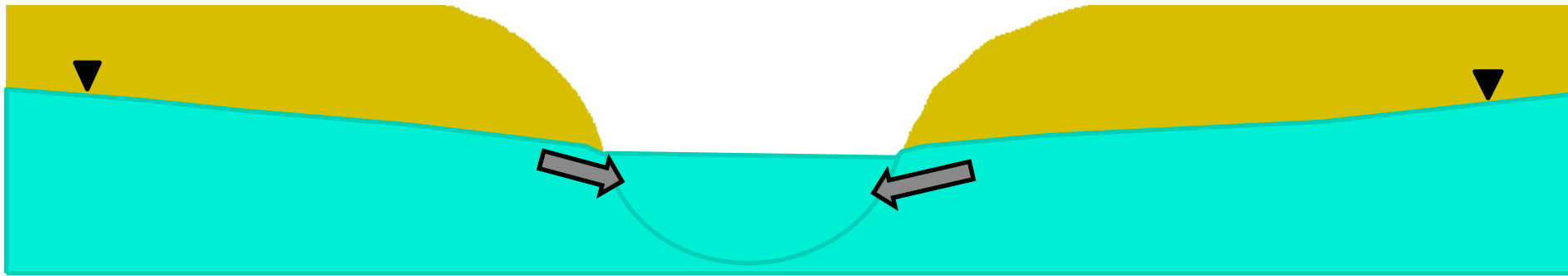
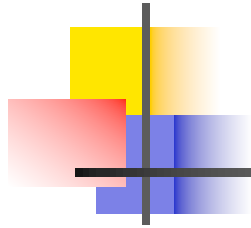


What is Ailing our River Systems



- n More utilization of water than availability
- n Point and non-point pollution
- n Diversion of flows to even encroach upon the environmental flow
- n Mining of ground water

Schematic of Gaining & Loosing river stretches



What planning should address

- n Hydrological health is preserved
 - n Demands do not exceed availability
 - n That is why we use basin as a unit
- n Environmental health is preserved
 - n Environmental demands of the rivers are recognized and provided





Actions required to be taken

- n Develop River Basin Management Plans
 - n Addressing Present & future demand
 - n Developmental pathways (with Climate Change as well)
- n Find alternatives for development
 - n That are sustainable
- n All this requires a scientific backup

Major Impacts of Climate Change

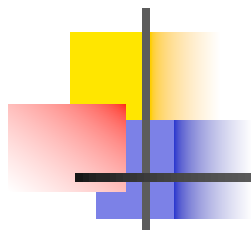


- n Reduction in number of rainy days
 - n 60% of rain-fed area under threat
 - n Requirement of supplementary irrigation (Storages)
- n Higher intensity rain
 - n More frequent and intense floods
 - n Higher erosion rates



Possible Adaptation Options

- n To create more storages
- n Manage the storages efficiently & effectively
- n Implement real-time flood forecasting systems
- n But the overall goal should be to restore the hydrological & environmental health of the river basins for sustainability



Thank you