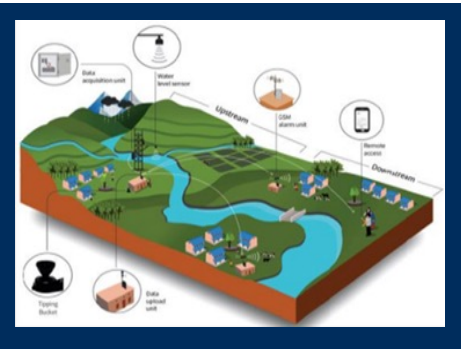
AmazonTEC

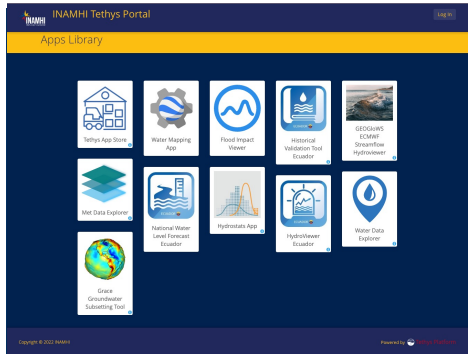
SERVIR AMAZONIA

GEOGLOWS
GLOBAL WATER SUSTAINABILITY

Improving Flood Warning in the Amazon

Jim Nelson – BYU (and many others)





NASA

BYU Civil & Construction Engineering
IRA A. FULTON COLLEGE OF ENGINEERING

Droughts in the Amazon

Scientists have documented deepening droughts in the Amazon Basin


Credit: Mongabay News


Credit: The New York Times


Credit: InfoAmazonia

Floods in the Amazon


Credit: BBC


Credit: Mongabay News

One of the most recurrent and costly natural disasters around the world

Water Security

Water quantity and quality for livelihoods, ecosystems, and production.

+

Acceptable water-related risks to people, environments, and economics.

Water Information is Critical

… adopted by ~200 countries

GEO Global Water Sustainability Initiative

GEO GLOWS
GLOBAL WATER SUSTAINABILITY

Connect People with Global Water Information

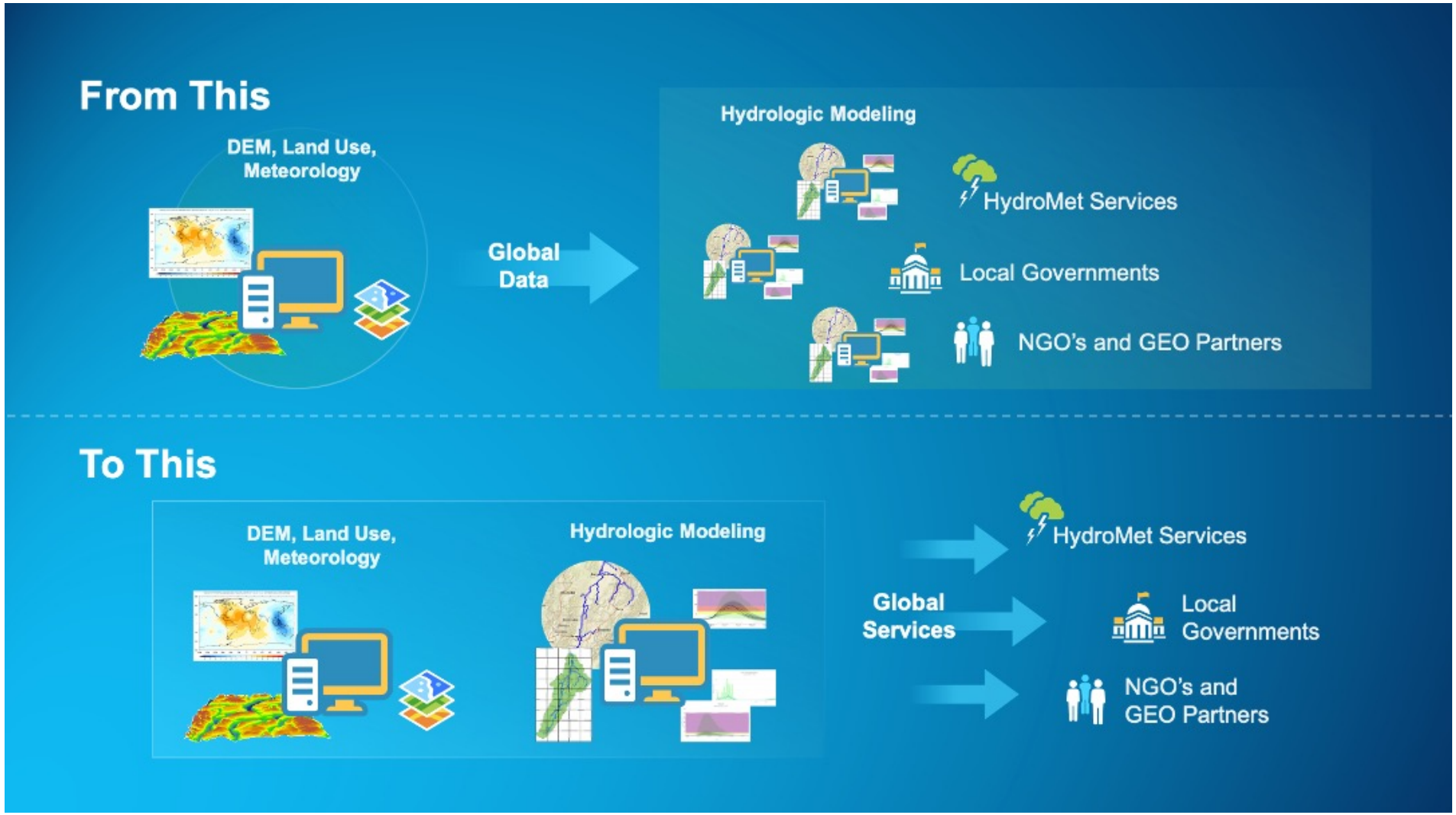
Role of Hydrologic Modeling

Understand

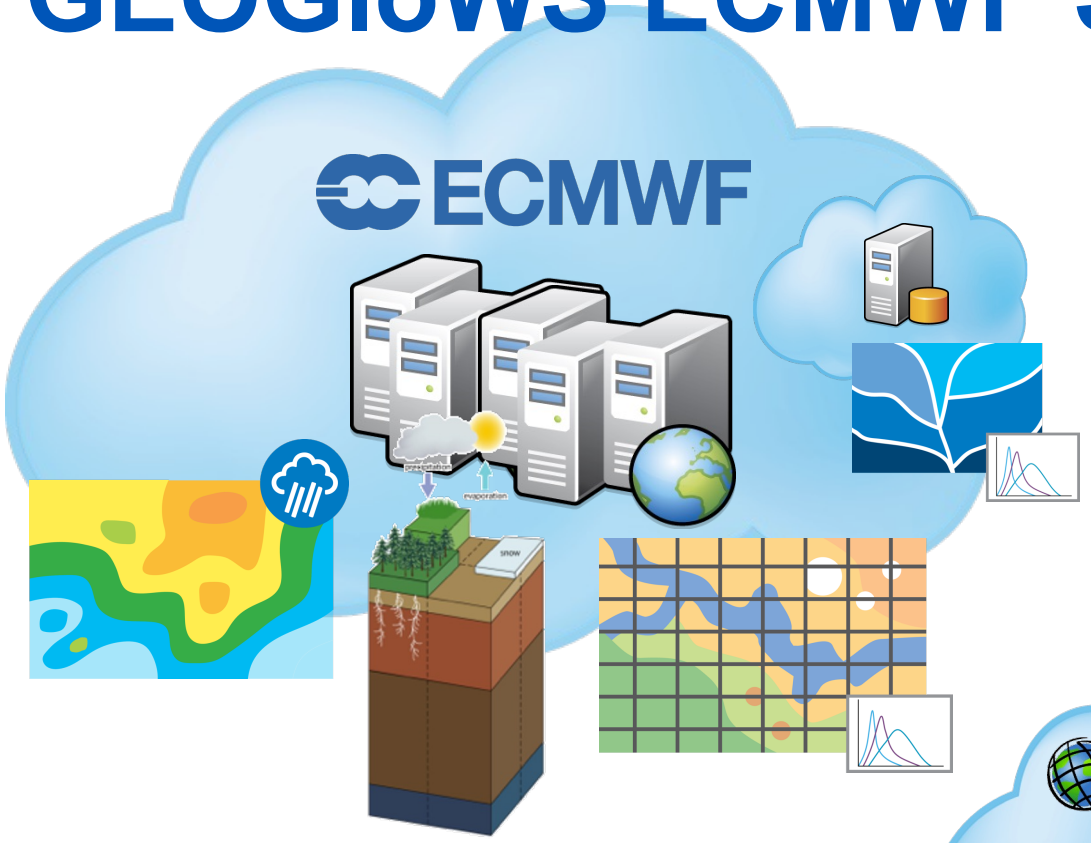
Predict

Manage

Global Models Support Local Decision Makers

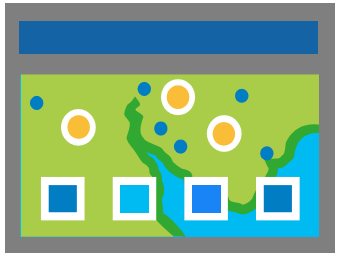


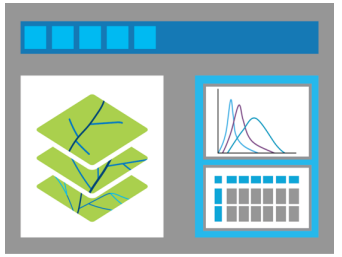
GEOGloWS ECMWF Streamflow Services



Streamflow API at ECMWF

Global WMS at Living Atlas



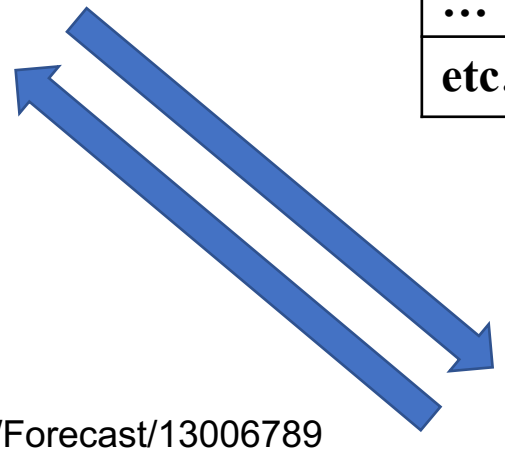


How to get results from the REST API

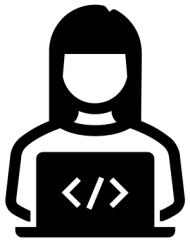
Global Model Dataset

Gets back a CSV of streamflow data

Feb 1 22 …	5 m^3/s
Feb 2 22 …	6 m^3/s
etc…	etc…

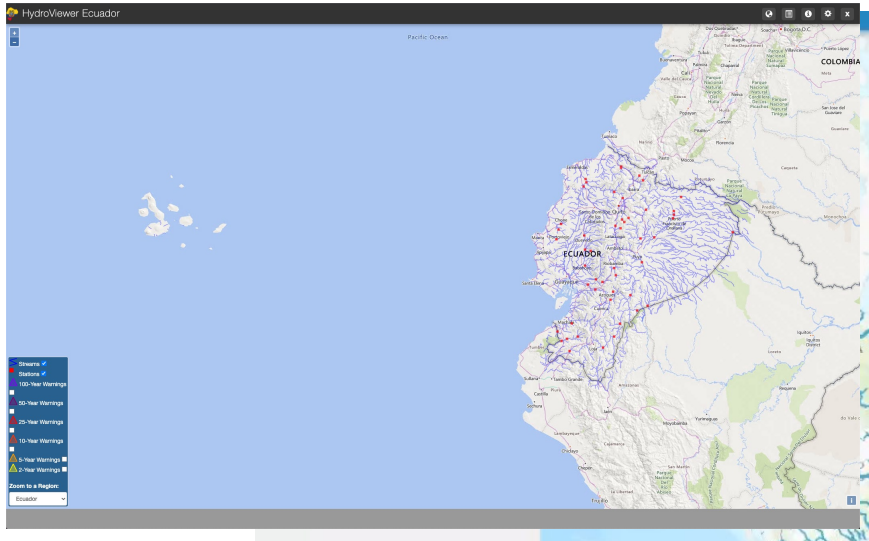


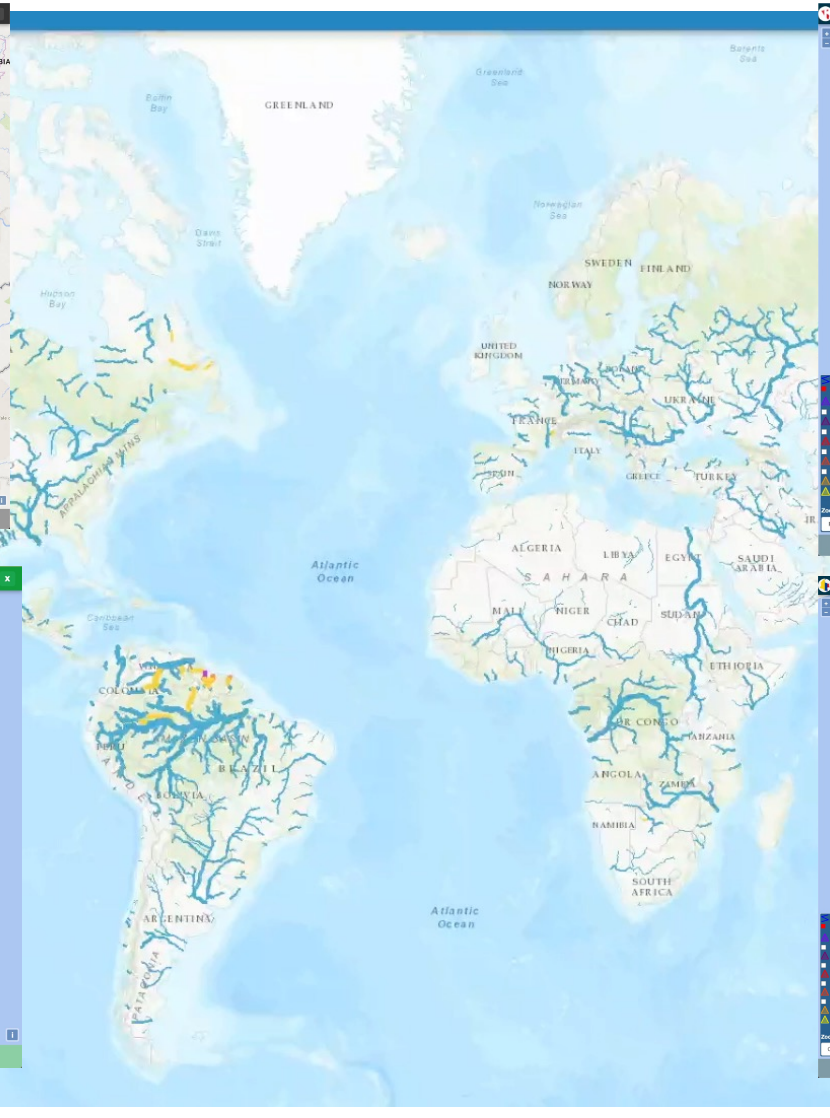
geoglows.ecmwf.int/api/v2/Forecast/13006789

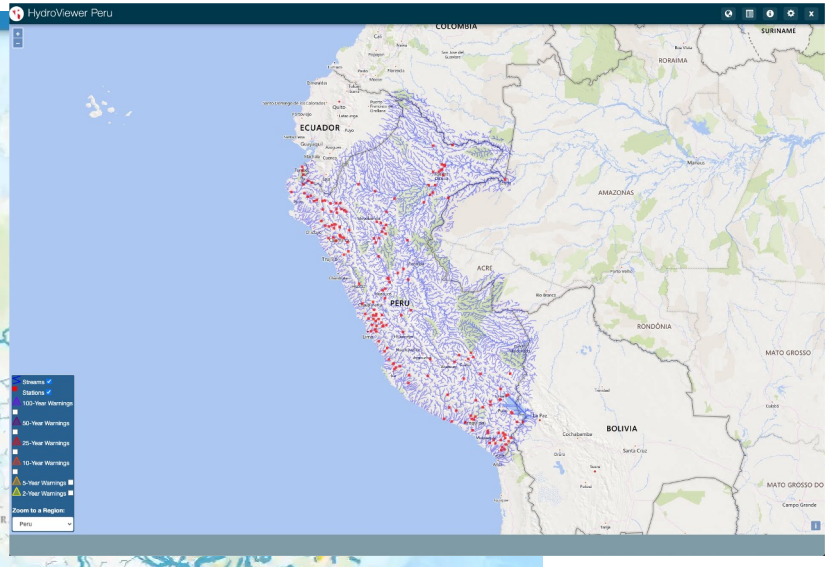


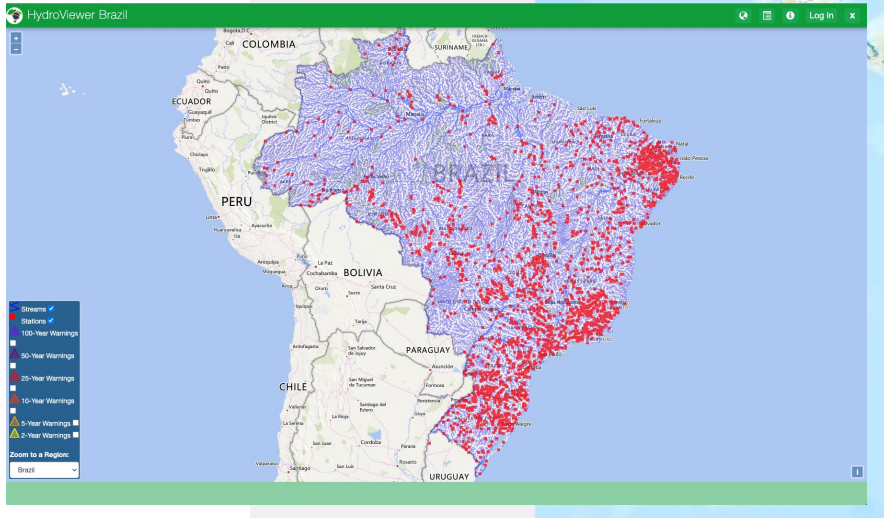
Hydrologist

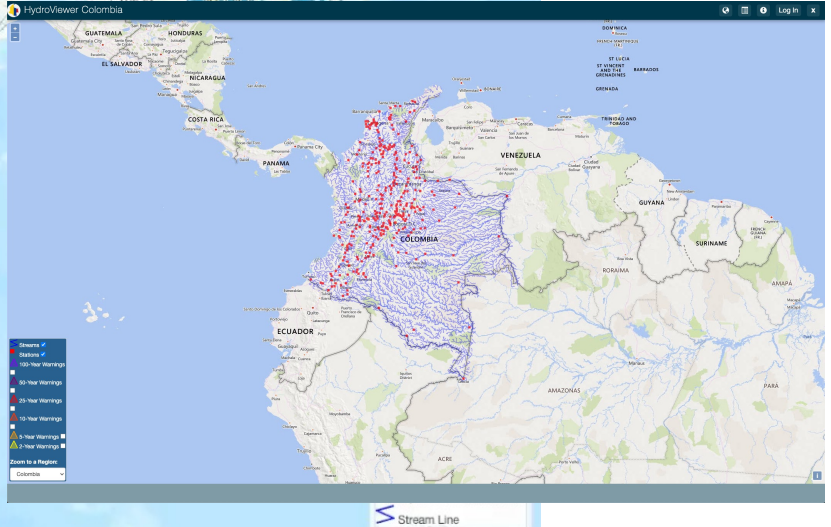
Global and Local Hydroviewers





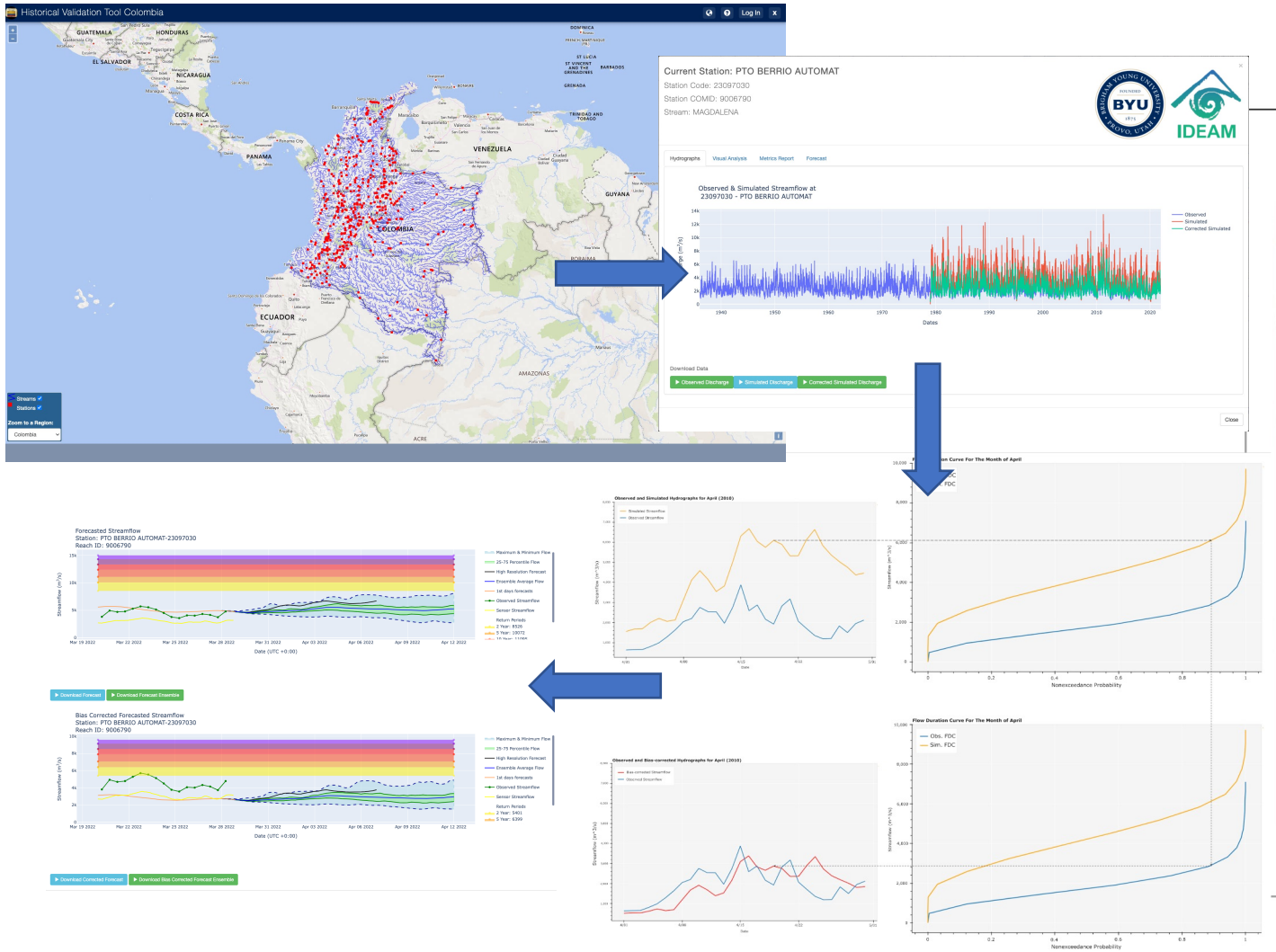


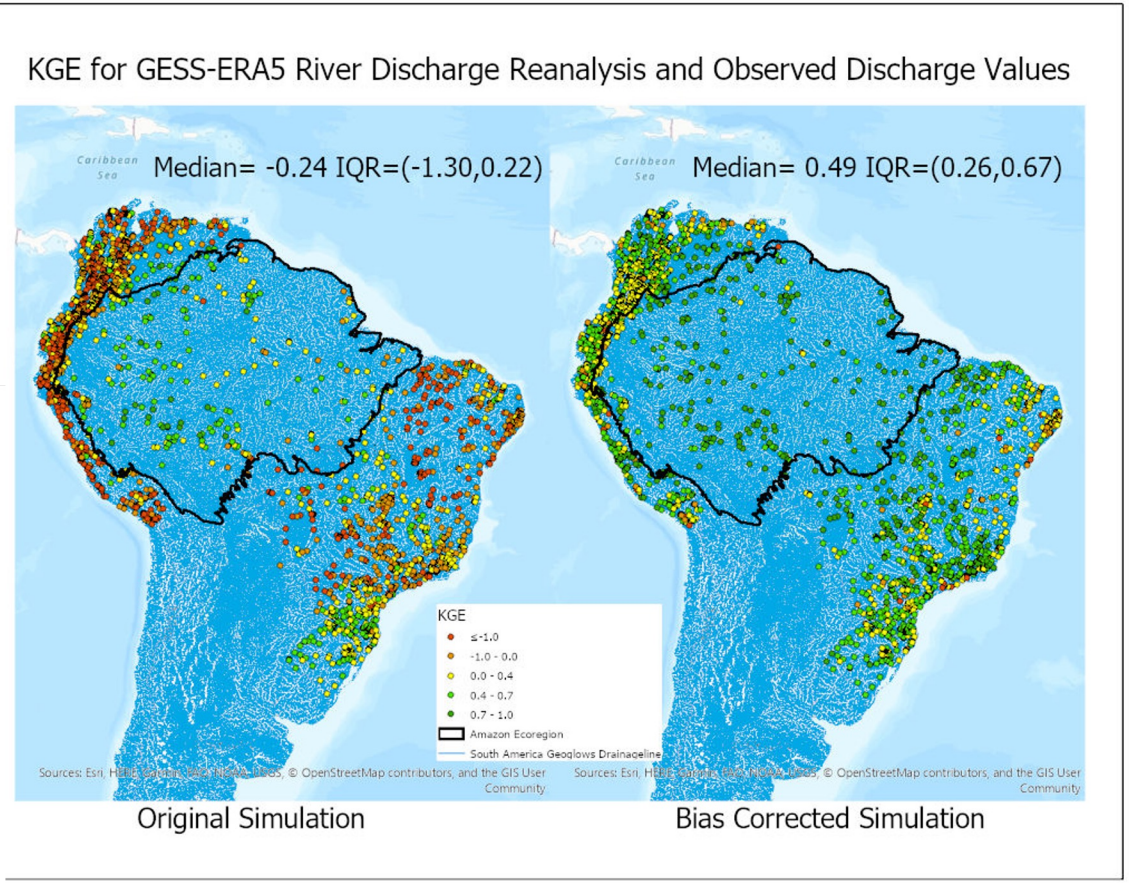




Stream Line

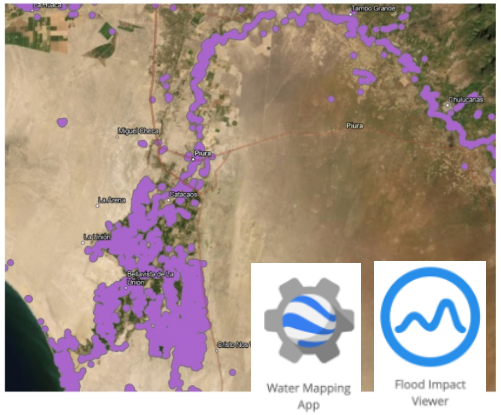
Bias Correction with Local Data



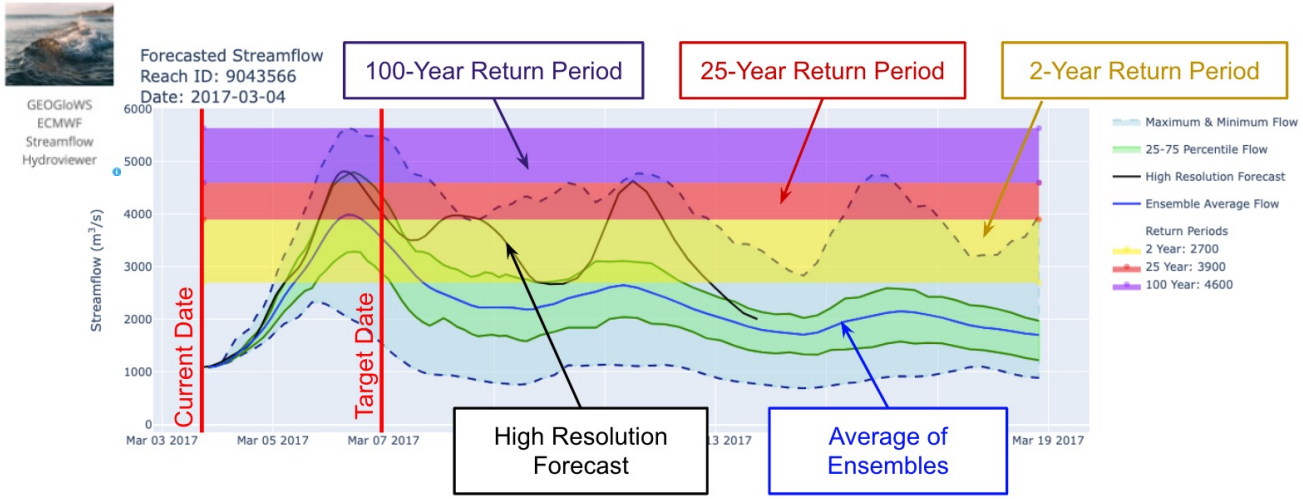


Training - Serious Game Applying GEOGloWS

100-Year Flood



100-Year Flood			
Category	**Impact**	**Cost per unit**	**Sub-total**
Agriculture	19191 hectares	$4,000	$76,764,240
Population	64425 people	$50	$3,221,250
Education	89	$7,500	$667,500
Entertainment	0	$10,000	$0
Financial	20	$10,000	$200,000
Food	11	$10,000	$110,000
Health Care	3	$70,000	$210,000
Public	13	$15,000	$195,000
Transportation	0	$25,000	$0
Waste Management	4	$7,500	$30,000
		Total Damage	**$81,397,990**



Actions		Lead Time									
		10 days	9 days	8 days	7 days	6 days	5 days	4 days	3 days	2 days	1 day
Round 1	Pre-position					X			-	-	-
	Sandbag									-	-
	Warn							X			
	Evacuate								X		

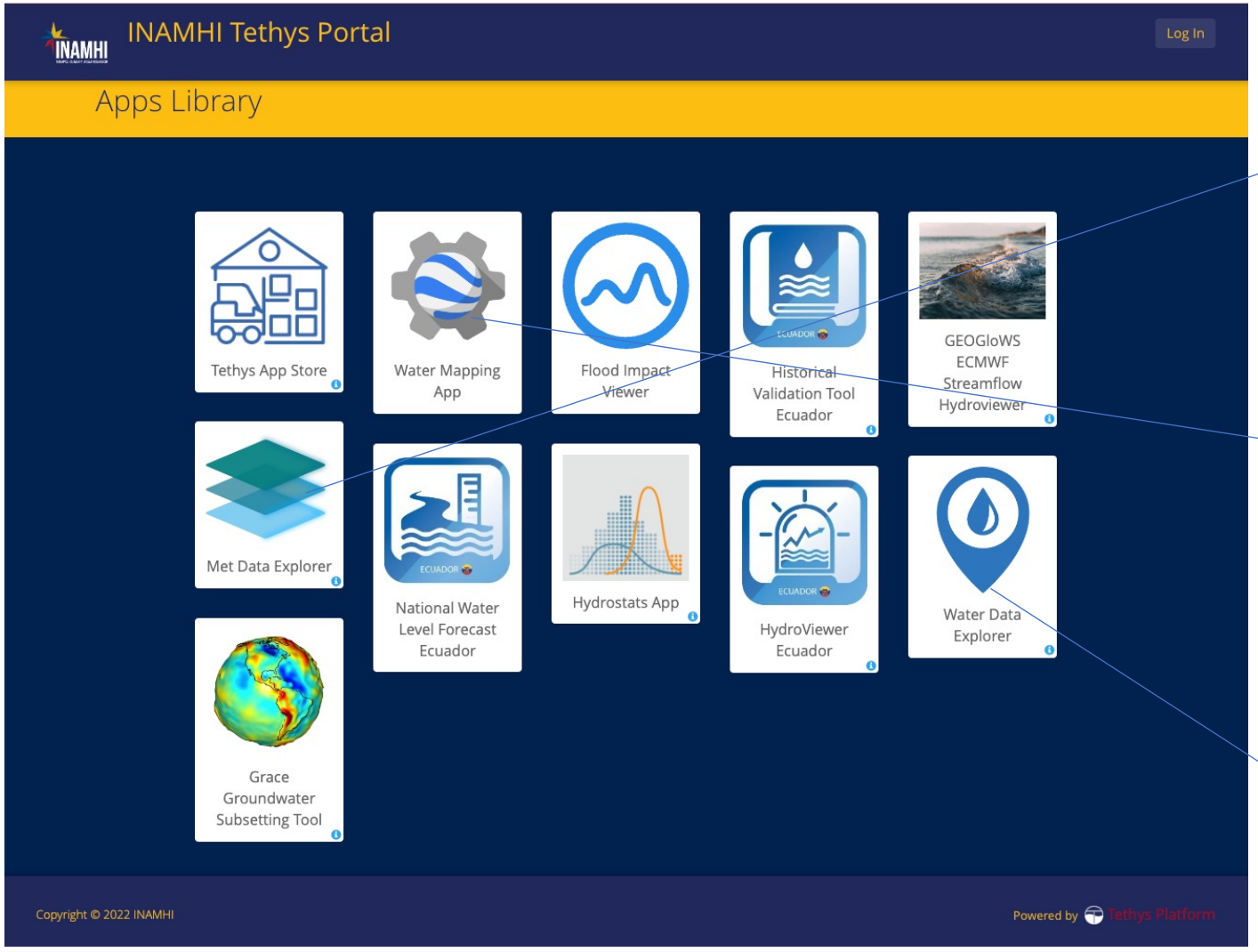
- **This is how you would calculate your cost of protection:**

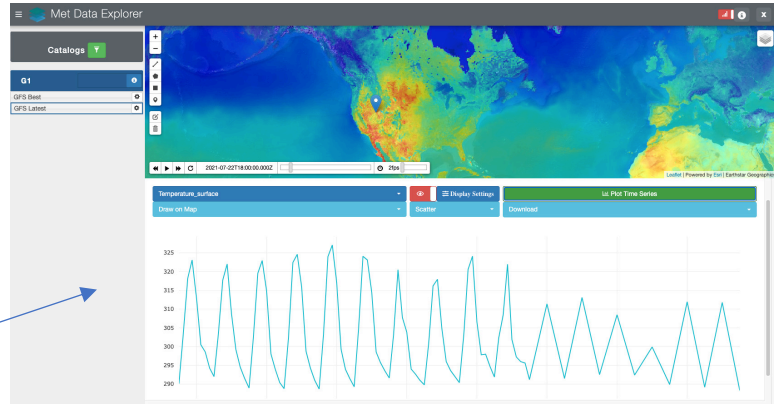
Actions	Lead Time									
	10 days	9 days	8 days	7 days	6 days	5 days	4 days	3 days	2 days	1 days
Pre-position	$25,000	$30,000	$35,000	$37,500	$40,000	$45,000	$50,000	-	-	-
Sandbag	$30,000	$35,000	$40,000	$45,000	$50,000	$55,000	$60,000	$65,000	-	-
Warn	$45,000	$32,000	$29,000	$26,000	$23,000	$20,000	$22,000	$25,000	$30,000	$40,000
Evacuate	$100,000	$95,000	$85,000	$80,000	$75,000	$70,000	$65,000	$60,000	$90,000	$120,000

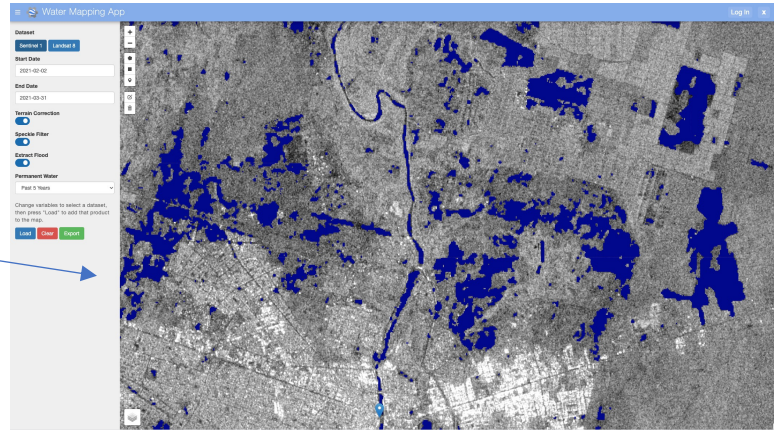
Cost of Protection = $0 + $30,000 + $150,000 + $40,000 + $22,000 + $60,000

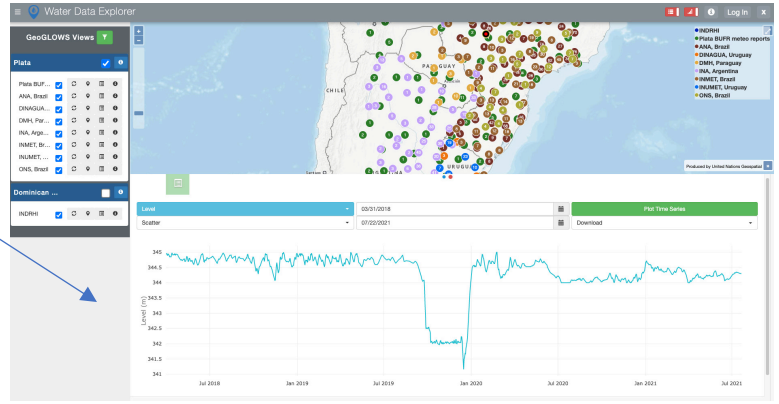
Cost of Protection = $302,000

GEOGloWS at a Toolbox

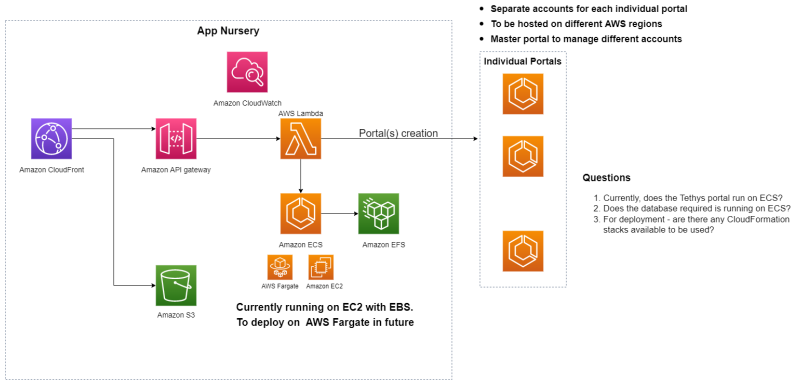




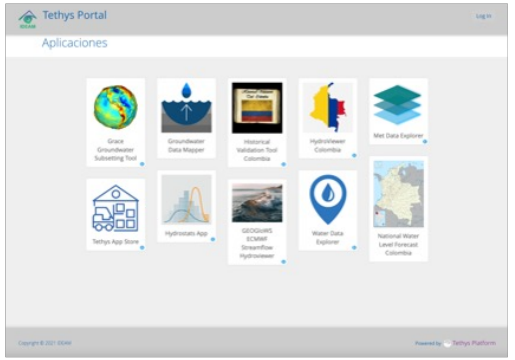




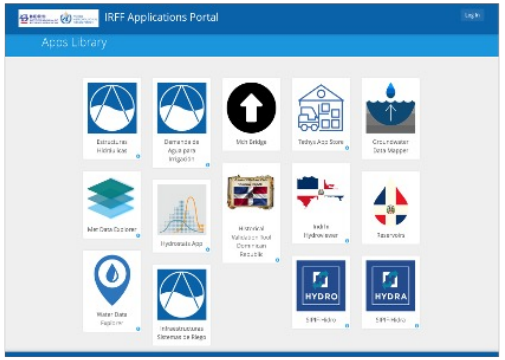
GEO – AWS Initiative



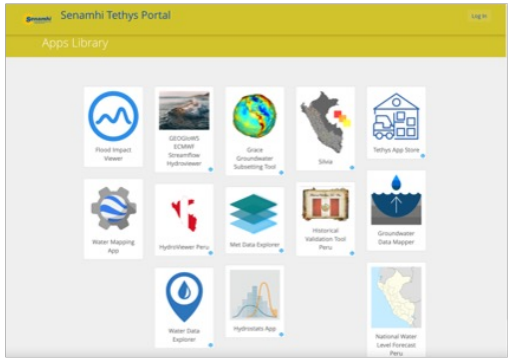
Colombia



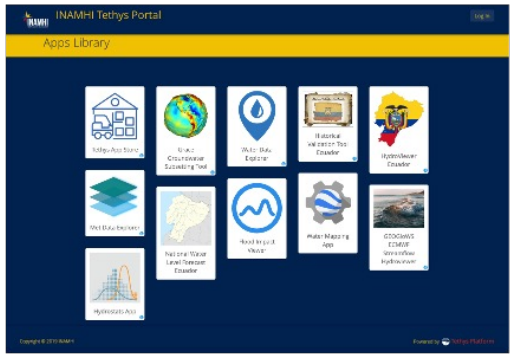
Dominican Republic



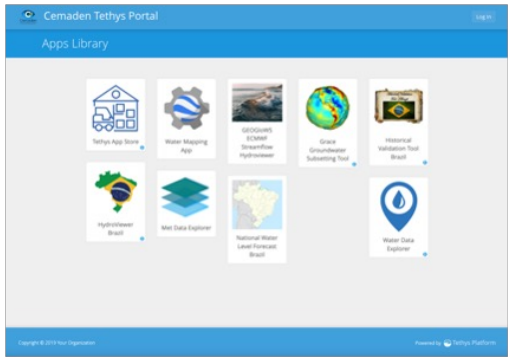
Peru



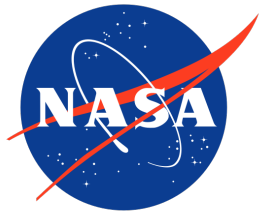
Ecuador



Brazil



Thank you!



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