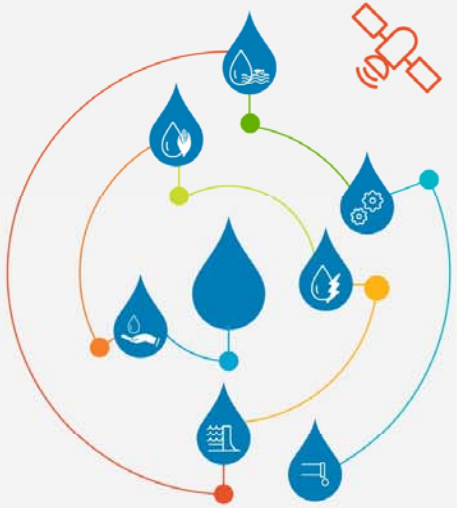
Basin Futures: Big data supporting rapid basin-scale water assessments



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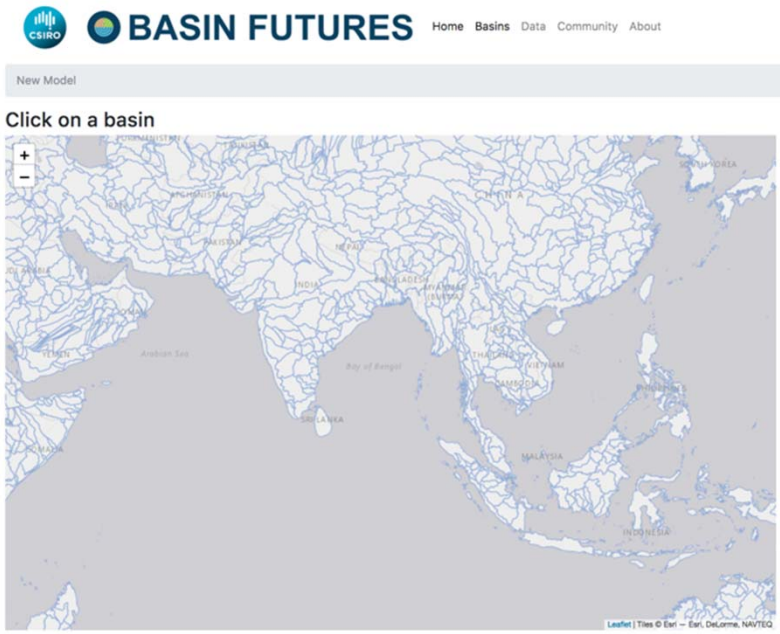
How do we make access to basin assessments easier?

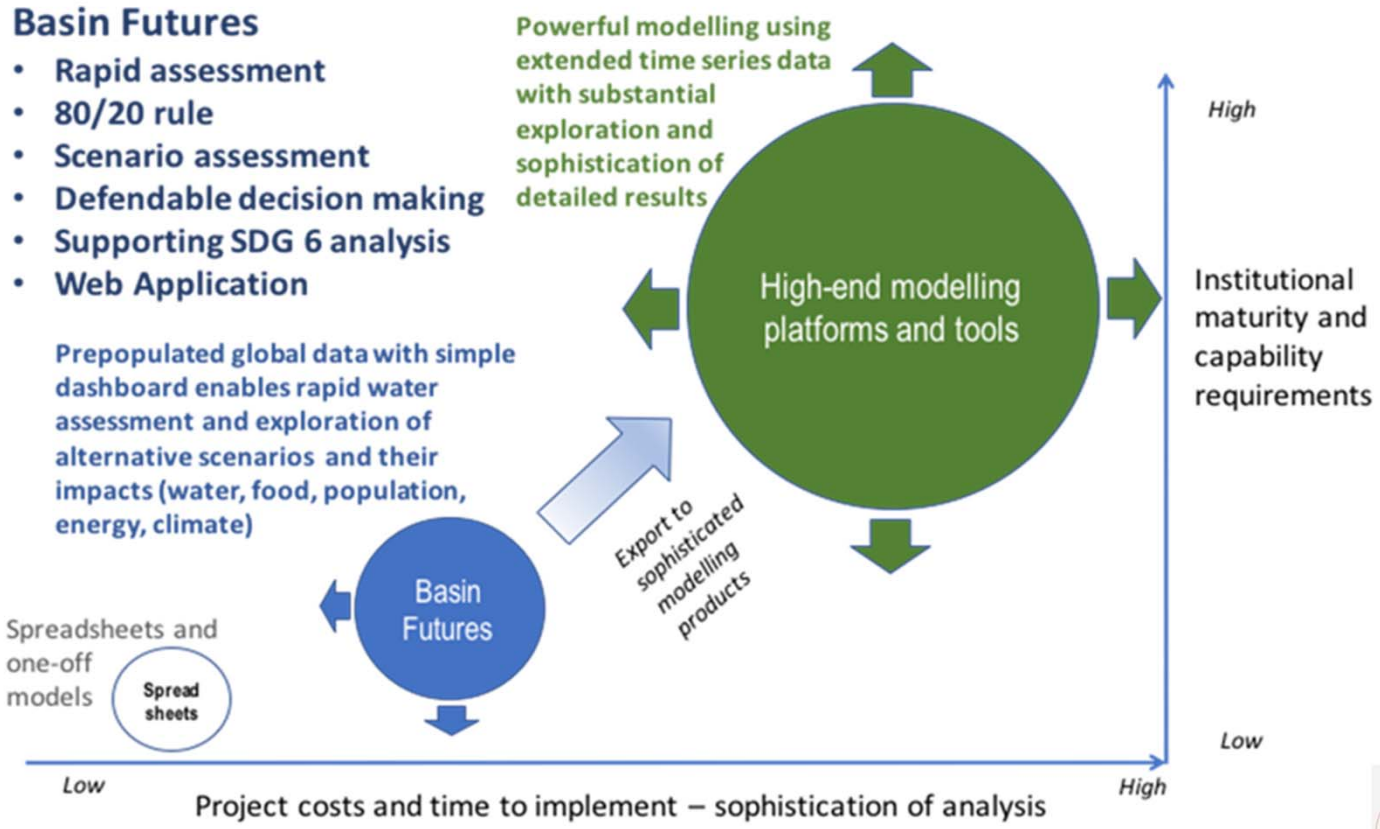
- Motivated by our learnings in South Asia: a ‘fit-for-purpose’ tool for clients
- Doing more with less
  - **Limited local data, less data munging, less cost, less time effort, less capacity, lower the barrier to entry (capability)**
- Decision focused rather than modelling focused
- How much? Water productivity? Is there opportunity for development?



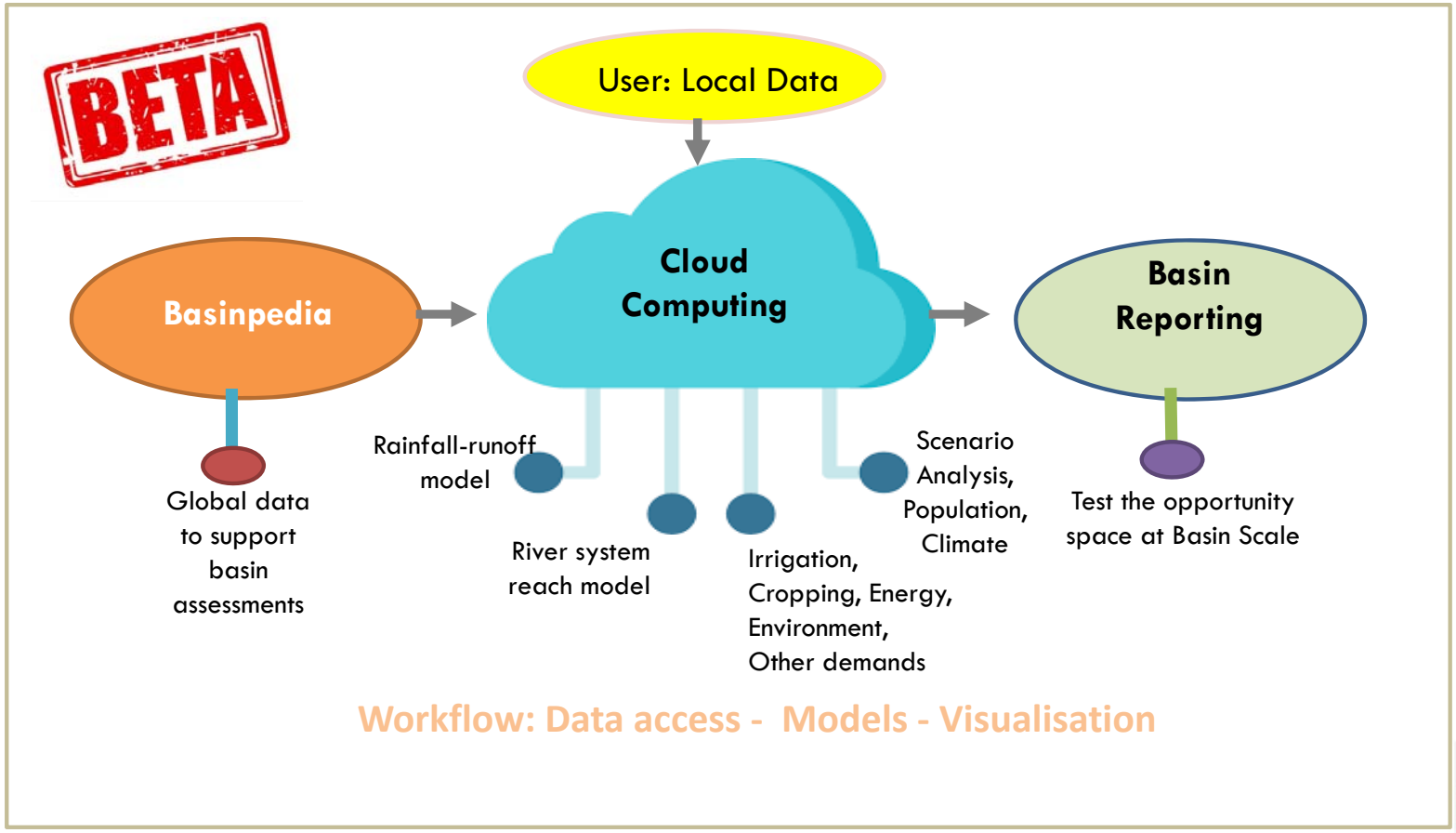
What are the ‘road blocks’ to kick-start the process?

- Information: Inputs - working assumption is that local data is needed; Outputs - not always fit for purpose for decisions
- Innovation: Whilst the science and practice of water planning is well explored, the implementation and ease of taking the first steps is not
- Technology: Workflows are not intuitive; Data access is challenging and processing cumbersome; Visualisations limited

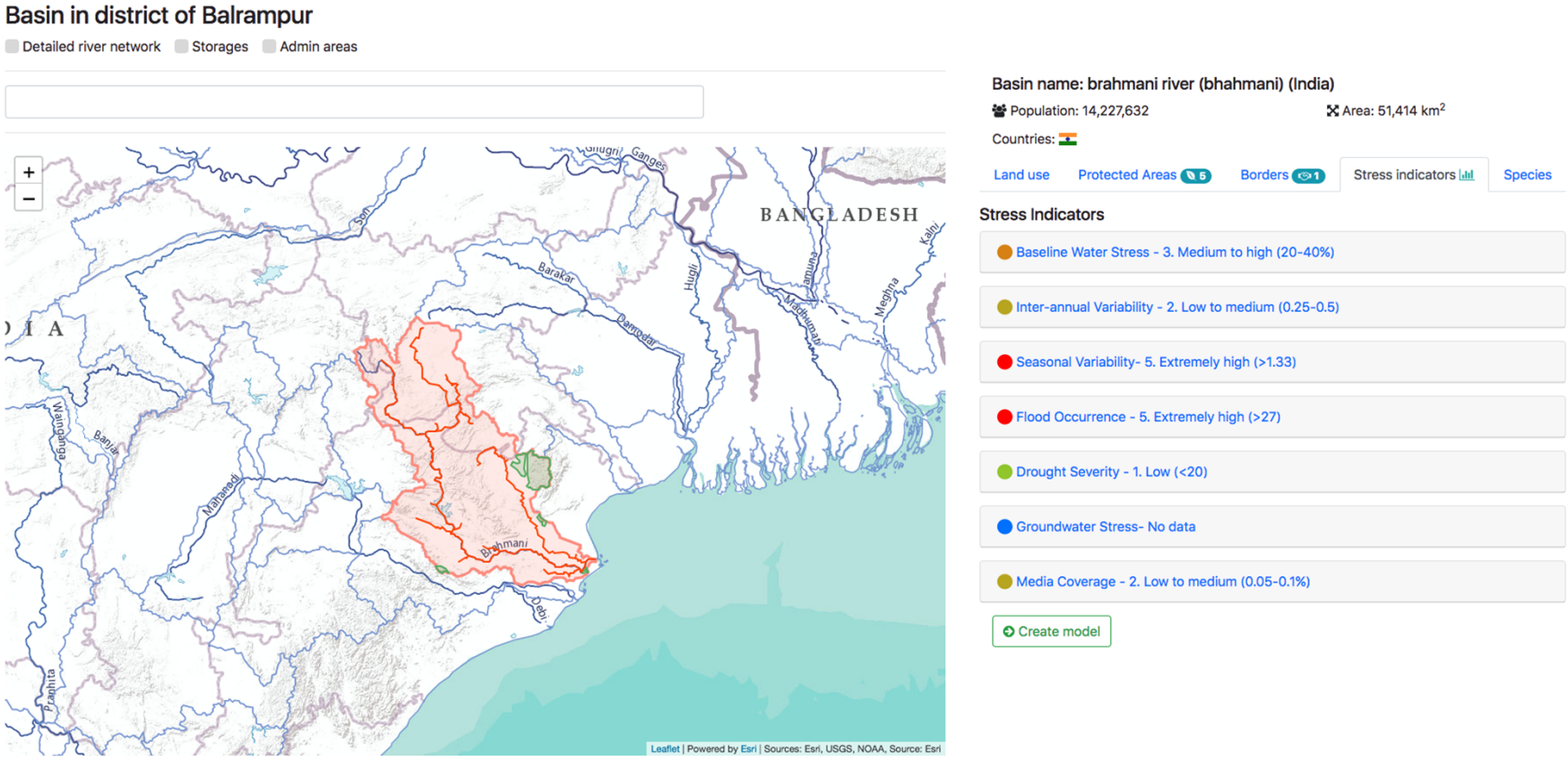
Creating a pathway - basic to sophisticated



Information, Innovation, Technology



Bringing together global datasets



Building on local knowledge

Reaches

Name	Area	Storage	Crops
Basin outflow	95 km^2	GL	0
Torpa area	2,539 km^2	GL	0
Gumla	4,916 km^2	GL	0
Barbil	4,963 km^2	GL	0
Rourkela	6,924 km^2	GL	0
Rengali	7,797 km^2	GL	0
Tampar	2,486 km^2	GL	0
Baitarni	11,944 km^2	GL	0
Bhuban	9,750 km^2	GL	0

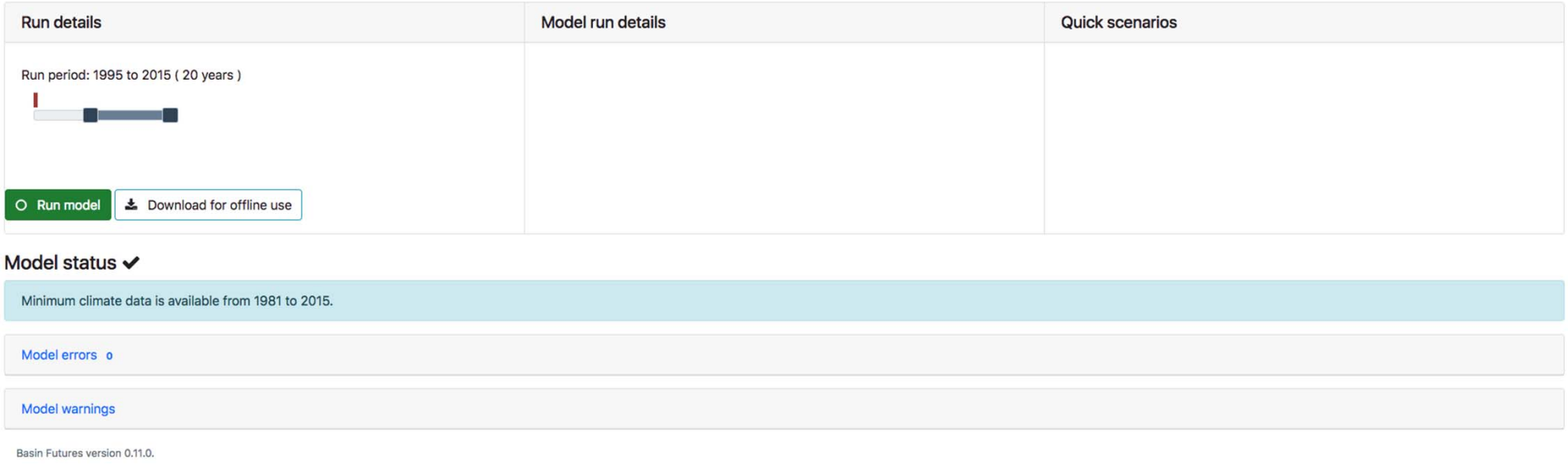
Editing Rengali

- Basic Information
- Runoff monthly
- Transfers 0 transfers in | 0 transfers out
- Storages
- Agriculture 0
- Demands
- Environment

Percentage of storage flow for environmental flow

January	0 %
February	0 %
March	0 %
April	0 %
May	0 %
June	0 %
July	0 %
August	0 %

Scale globally through cloud computing technology



Visualising scenarios of change

Model Results | Scenarios

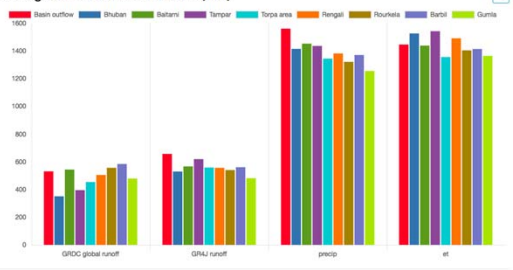
Whole of basin

1,394	1,443	563	27,954
Mean Annual Rainfall (mm)	Mean Annual ET (mm)	Mean Annual Runoff (mm)	Basin outflow outlet - Outflow (GL)

Reach summaries

Runoff contribution by reach

Average annual climate and runoff (mm)



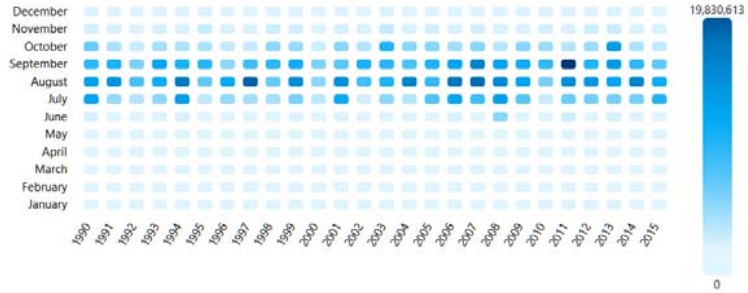
Agriculture

Annual crop yield

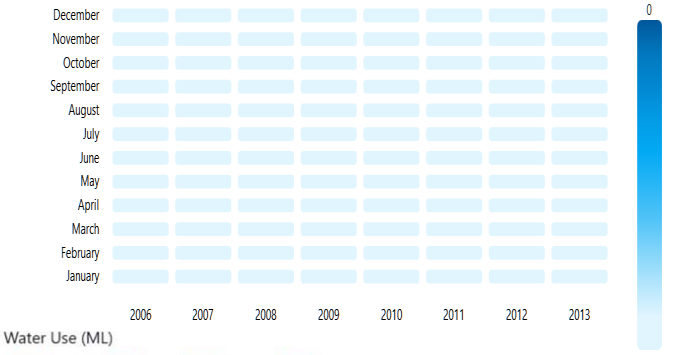
Crop type	Harvest date	Yield (kilotonnes)	Value (US M$)
Rice (paddy) - irrigated	06 December	3613415	2348719.75
Rice (paddy) - irrigated	05 January	3613415	2348719.75

Download results

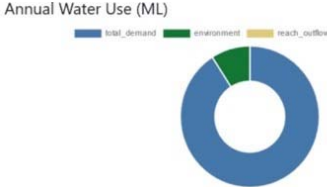
Monthly Flows (ML)



Monthly Flows (ML)



Annual Water Use (ML)



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Exploring water security at basin scale

Information

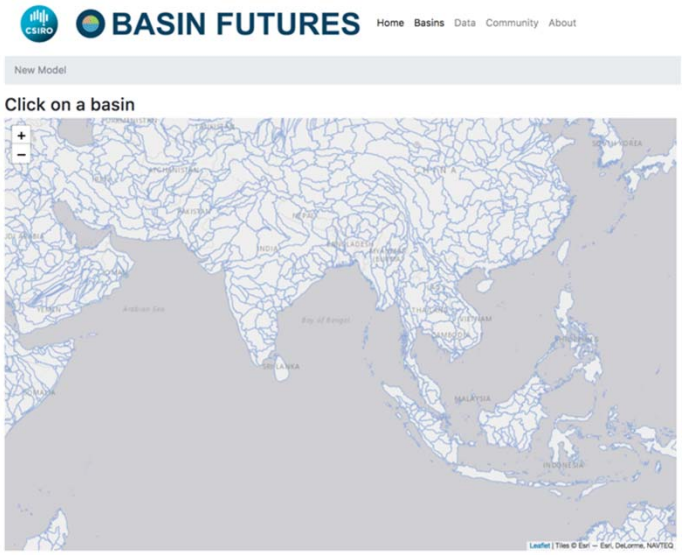
- How much water is in my basin?
- What is the water productivity?
- How does this change under climate and development scenarios?

Innovation

- Creating a pathway – basic to sophisticated

Technology

- Accessibility: faster, cheaper and reducing the barrier to entry
- Relevance: Outputs are decision ready



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Winner of the Big Data Challenge for Watershed Management

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