



Introduction and update information on **Downstream Response to Imposed Flow Transformation (DRIFT)** and its applications



DRIFT
DKTHI

Downstream Response to Imposed Flow Transformations

version: v2.54

โดย

นายวินัย วังพิมุต

วิศวกร ชำนาญการพิเศษ

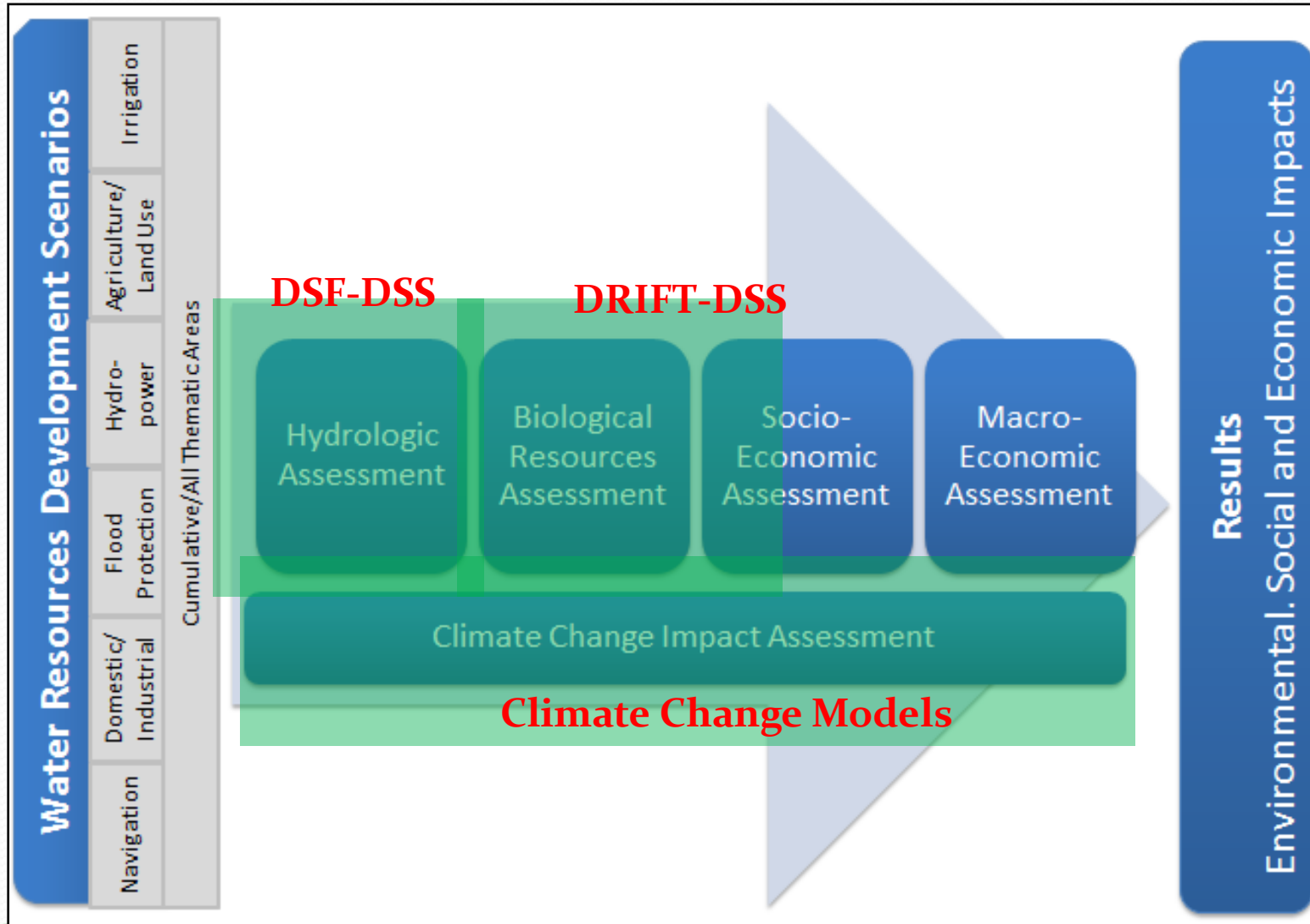
Question ?

- DRIFT คือ อะไร?
- ทำไม ต้องใช้ DRIFT ?
- DRIFT ตอบโจทย์อะไรเราบ้าง ?
- DRIFT มีหน้าตาเป็นอย่างไร ?
- ฯลฯ





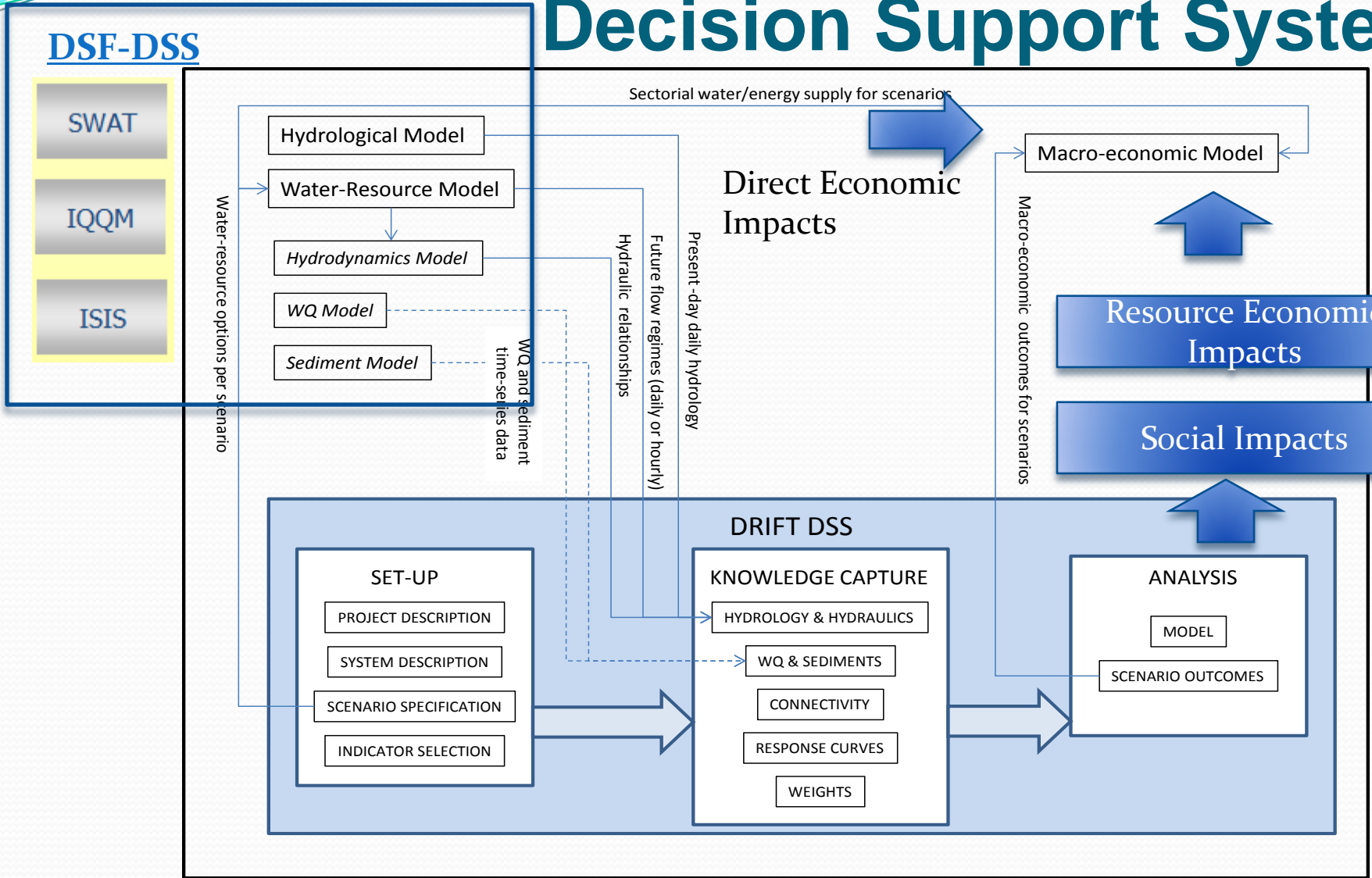
Assessment Models and Tools





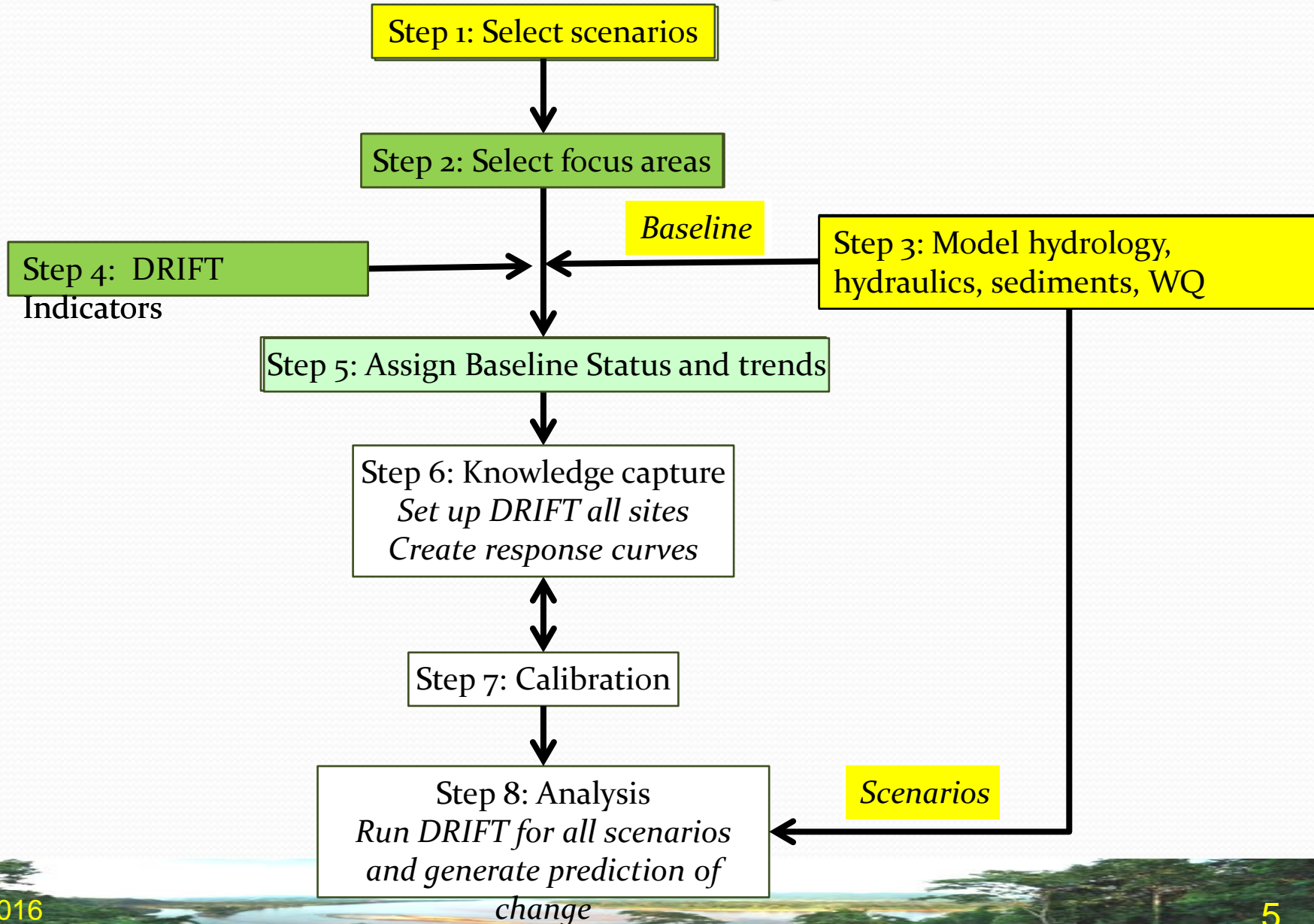
ทำไม ต้องใช้ DRIFT ?

Decision Support System



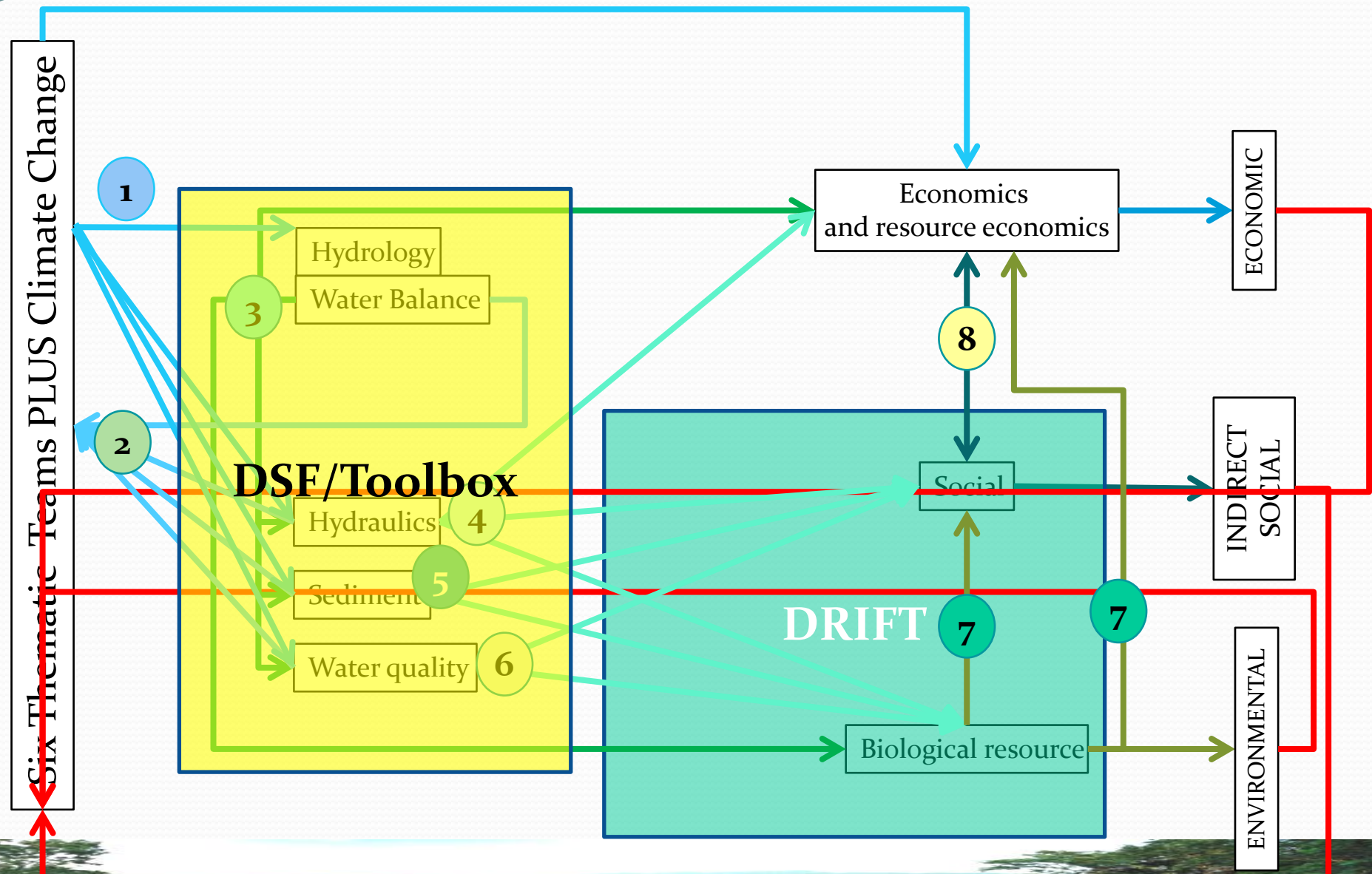


DRIFT Conceptual





Data flow and Linkage





DRIFT User Interface

DRIFT - BioRA - Mekong Council Study

Project ▾ 1. Setup 2. Knowledge Capture 3. Analysis

1. SETUP <<

PROJECT DESCRIPTION

- ▶ Project details
- ▶ Client and Consultants

SYSTEM DESCRIPTION

- ▶ Photos
- ▶ Delineation
- ▶ Site specification
- ▶ Water resource developments
- ▶ Ecosystem targets

SCENARIO SPECIFICATION

- ▶ General description
- ▶ Specifications

INDICATOR SELECTION

- ▶ Project indicators
- ▶ Site indicators
- ▶ Composite indicators
- ▶ Links

DRIFT
DRIFT
Downstream Response to Imposed Flow Transformations
version: v2.54

DRIFT, v2.54 Server: Embedded, Database: C:\DRIFT\Data\MekongCouncilStudy\DB\ User:



3 Components of DRIFT

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2. KNOWLEDGE CAPTURE <<

HYDROLOGY & HYDRAULICS ▲

- ▶ Parameters & time-series data
- ▶ Delineate flood events
- ▶ Site calibration
- ▶ Calc flow indicators
- ▶ Indicator charts

WATER QUALITY

- ▶ Water quality fitness for use
- ▶ Calc water quality indicators

SEDIMENT ⌵

- ▶ Sediment indicators
- ▶ Calc sediment indicators

EXTERNAL INDICATORS ⌵

- ▶ External indicators
- ▶ Calc external indicators

CONNECTIVITY

- ▶ Water Resource Dev, Effects

RESPONSE CURVES

- ▶ Habitat & biota
- ▶ Socio-economic
- ▶ Export / Import

INTEGRITY

- ▶ Discipline integrity weights
- ▶ Site integrity weights
- ▶ Present Ecological Status

3. ANALYSIS <<

INTEGRITY LINKED FLOWS ⌵

- ▶ Synthetic Flow Regimes
- ▶ Run Synthetic Flows
- ▶ Category plots

SCENARIO OUTCOMES ⌵

- ▶ Run model
- ▶ Charts
- ▶ Integrity maps
- ▶ Integrity charts



Open Project

The screenshot shows the DRIFT software interface. On the left is a navigation menu with sections: 'SYSTEM DESCRIPTION' (Photos, Delineation, Site specification, Water resource developments, Ecosystem targets), 'SCENARIO SPECIFICATION' (General description, Specifications), and 'INDICATOR SELECTION' (Project indicators, Site indicators, Composite indicators, Links). The main window displays the DRIFT logo (a stylized fish) and the text 'DRIFT Downstream Response to Imposed Flow Transformations version: v2.54'. A 'Browse for Folder' dialog box is open, showing a file tree for 'Local Disk (C:)' with the 'DRIFT' folder and its subfolders 'Bin' and 'Data' highlighted by a red rectangle. The 'Data' folder contains a subfolder named 'MekongCouncilStudy'. The dialog box has 'OK' and 'Cancel' buttons at the bottom.

DRIFT, v2.54

Server: Embedded, Database: C:\DRIFT\Data\MekongCouncilStudy\DB\

User:



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- ▶ Links

Project description / Client & consultants

Edit Save

Client:

Name:

Personel:

First name	Last name	Organisation	Role

+ - ↑ ✓ ×

Main Consultant:

Name:

Personel:

First name	Last name	Organisation	Role

+ - ↑ ✓ ×

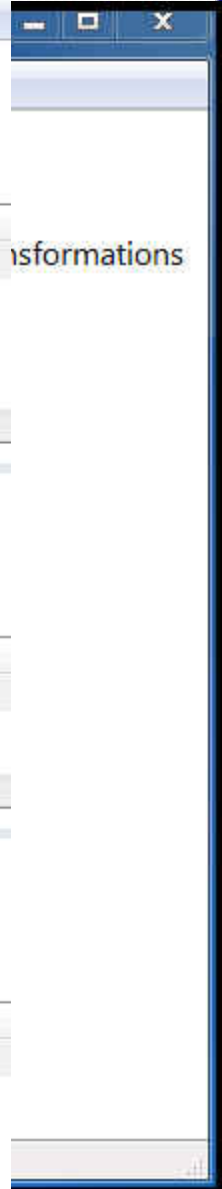
Environmental Flows Consultant:

Name:

Personel:

First name	Last name	Organisation	Role

+ - ↑ ✓ ×





System Description

DRIFT - BioRA - Mekong Council Study

Project ▾ 1. Setup 2. Knowledge Capture 3. Analysis

1. SETUP

System Description / Delineation

PROJECT DESCRIPTION

- Project details
- Client and Consultants

SYSTEM DESCRIPTION

- Photos
- Delineation
- Site specification
- Water resource developments
- Ecosystem targets

SCENARIO SPECIFICATION

- General description
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INDICATOR SELECTION

- Project indicators
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- Links

Map Satellite

Latitude: 17.3926
Longitude: 87.7148
Mode: <Not set>
X: 20
Y: 203

Position Other

Pan To
Latitude: -17.9768 Pan
Longitude: 26.4560

Zoom
Level: 11 Zoom

Show map Edit Save

Nodes Arcs Zones

ID	△	Latitude	Longitude	Description
0		21.5662	101.1586	Chinese, Laos, Burma border - start of study area
1		19.8589	101.0797	FA1 (top)
2		18.2079	102.1260	FA2 (top)
3		17.2066	104.8061	FA3 (top)
4		13.5559	105.9511	FA4 (top)
5		12.2980	105.5926	FA5 (top)
6		11.8787	104.7827	FA6 Tonle Sap River (doser to lake)



Scenarios Specification

DRIFT - BioRA - Mekong Council Study

Project ▾ | 1. Setup | 2. Knowledge Capture | 3. Analysis

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Scenario specification / Water resource developments & Ecosystem targets

☰ ☰ Edit Cancel Save

Legend:

- Include in scenario (I)
- Exclude (E)

Scenarios

Reference	Preliminary Refere	6Dry6Wet
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Zone Ecosystem targets: (Zone / Condition)

Zone1 /			
Zone2 /			
Zone3 /			
Zone4 /			
Zone5 /			
Zone6 /			
Zone7 /			
Zone8 /			

1 sediment still from observed (i.e. with trends)
r 6 wet, then 6 dry, 6 wet

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▶ **Indicator selection / Project indicators**

Disciplines Indicator Pool

Order	Code	Name	Units	Category	Description
[-] Hydrology					
	DExtV19_Max	Dry: max pH	ppm	Flow	
	T1ExtV19_Max	T1: max pH	ppm	Flow	
	WExtV19_Max	Wet: max pH	ppm	Flow	
	T2ExtV19_Max	T2: max pH	ppm	Flow	
	DExtV20_Max	Dry: max Dissolved Oxygen	ppm	Flow	
	T1ExtV20_Max	T1: max Dissolved Oxygen	ppm	Flow	
	WExtV20_Max	Wet: max Dissolved Oxygen	ppm	Flow	
	DExtV21_Max	Dry: max Salinity/conductivity	ppm	Flow	
	WExtV21_Max	Wet: max Salinity/conductivity	ppm	Flow	
	T2ExtV21_Max	T2: max Salinity/conductivity	ppm	Flow	
	T1ExtV21_Max	T1: max Salinity/conductivity	ppm	Flow	
	DExtV22_Max	Dry: max Alkanity	ppm	Flow	
	WExtV22_Max	Wet: max Alkanity	ppm	Flow	
	T2ExtV22_Max	T2: max Alkanity	ppm	Flow	
	T1ExtV22_Max	T1: max Alkanity	ppm	Flow	
	DExtV23_Max	Dry: max Sulphate	ppm	Flow	
	WExtV23_Max	Wet: max Sulphate	ppm	Flow	
	T2ExtV23_Max	T2: max Sulphate	ppm	Flow	
	T1ExtV23_Max	T1: max Sulphate	ppm	Flow	
	DExtV24_Max	Dry: max Chem Oxygen Demand	ppm	Flow	
	WExtV24_Max	Wet: max Chem Oxygen Demand	ppm	Flow	
	T2ExtV24_Max	T2: max Chem Oxygen Demand	ppm	Flow	
	T1ExtV24_Max	T1: max Chem Oxygen Demand	ppm	Flow	
	DExtV25_Max	Dry: max Nitrate + Nitrite	ppm	Flow	
	WExtV25_Max	Wet: max Nitrate + Nitrite	ppm	Flow	
	T2ExtV25_Max	T2: max Nitrate + Nitrite	ppm	Flow	
	T1ExtV25_Max	T1: max Nitrate + Nitrite	ppm	Flow	
	DExtV26_Max	Dry: max Ammonia	ppm	Flow	



Composite Indicators

DRIFT - BioRA - Mekong Council Study

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Indicator selection / Composite indicators

Edit Save

Composite indicators:

LinkID	Indicator	Site (Indicator)	Input	Site (Input)	Weight
621	Benthic invertebrate biomass	FA1-Pak Beng	Insects on sand	FA1-Pak Beng	1
779	Fish Biomass	FA2-Vientiane	Eurytopic (generalist)	FA2-Vientiane	1
620	Benthic invertebrate biomass	FA1-Pak Beng	Insects on stones	FA1-Pak Beng	1
631	Fish Biomass	FA1-Pak Beng	Non-native	FA1-Pak Beng	20
630	Fish Biomass	FA1-Pak Beng	Eurytopic (generalist)	FA1-Pak Beng	1
629	Fish Biomass	FA1-Pak Beng	Floodplain spawner (grey)	FA1-Pak Beng	5
628	Fish Biomass	FA1-Pak Beng	Main channel spawner (short distance white)	FA1-Pak Beng	30
627	Fish Biomass	FA1-Pak Beng	Main channel resident (long distant white)	FA1-Pak Beng	40
626	Fish Biomass	FA1-Pak Beng	Rhithron resident	FA1-Pak Beng	5
625	Benthic invertebrate biomass	FA1-Pak Beng	Shrimps and crabs	FA1-Pak Beng	1
624	Benthic invertebrate biomass	FA1-Pak Beng	Bivalves abundance	FA1-Pak Beng	1
623	Benthic invertebrate biomass	FA1-Pak Beng	Snail abundance	FA1-Pak Beng	1
622	Benthic invertebrate biomass	FA1-Pak Beng	Burrowing mayflies	FA1-Pak Beng	1
778	Fish Biomass	FA2-Vientiane	Main channel spawner (short distance white)	FA2-Vientiane	1
777	Fish Biomass	FA2-Vientiane	Main channel resident (long distant white)	FA2-Vientiane	1
774	Benthic invertebrate biomass	FA2-Vientiane	Bivalves abundance	FA2-Vientiane	1
772	Benthic invertebrate biomass	FA2-Vientiane	Burrowing mayflies	FA2-Vientiane	1
773	Benthic invertebrate biomass	FA2-Vientiane	Snail abundance	FA2-Vientiane	1
776	Fish Biomass	FA2-Vientiane	Rhithron resident	FA2-Vientiane	1
771	Benthic invertebrate biomass	FA2-Vientiane	Insects on stones	FA2-Vientiane	1
775	Benthic invertebrate biomass	FA2-Vientiane	Shrimps and crabs	FA2-Vientiane	1
770	Benthic invertebrate biomass	FA2-Vientiane	Insects on sand	FA2-Vientiane	1
780	Fish Biomass	FA2-Vientiane	Floodplain spawner (grey)	FA2-Vientiane	1
781	Fish Biomass	FA2-Vientiane	Non-native	FA2-Vientiane	1
782	Fish Biomass	FA3-Se Bang Fai	Rhithron resident	FA3-Se Bang Fai	1
783	Fish Biomass	FA3-Se Bang Fai	Main channel resident (long distant white)	FA3-Se Bang Fai	1

DRIFT, v2.54

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Windows taskbar with icons for Start, Internet Explorer, Firefox, Chrome, and other applications. System tray shows date and time: 12:28 16/08/2015.



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Next STEP

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3. Analysis

3. ANALYSIS



INTEGRITY LINKED FLOWS



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SCENARIO OUTCOMES



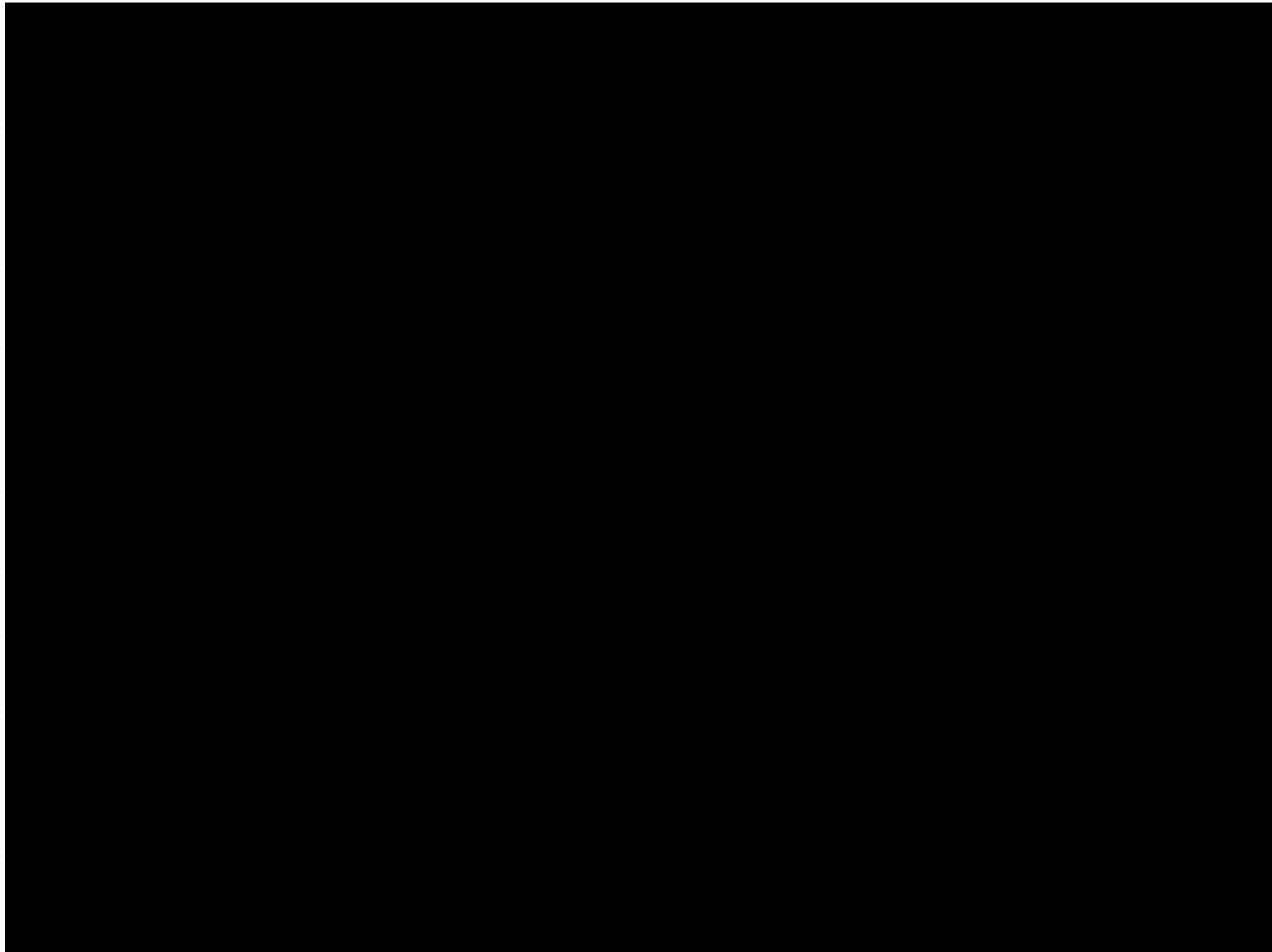
- ▶ Run model
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- ▶ Integrity maps
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Demonstration



DRIFT-Demonstration





Reference

<http://www.southernwaters.co.za/drift.html>

Southern Waters Consulti x

Winair

www.southernwaters.co.za/drift.html

Google CNN Facebook Journal List MRC Flood Learn English Learn GIS-Model Grad_KU Volunteer Landslide and Debris Design Model

ค้นหาข้อมูล

southern waters

HOME PROJECTS ▾ PUBLICATIONS STAFF & ASSOC **DRIFT** PROFILE GRADUATE STUDENTS CONTACTS

DRIFT

Southern Waters Drift DSS

System description / Photos