MRC Council Study: Agendas

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MONDAY 6th July		Presenter/Facilitator
8:00 AM	Welcome and Introductions	So Nam
8:10 AM	Presentation of AGENDAS FOR THE WEEK	Cate Brown
8:30 AM	BioRA Introduction	Cate Brown
9:30 AM	Water quality and geomorphology: Background and progress to date	Lois Koehnken
	Status and trends: Water quality and geomorphology	Bounheng Soutichak Toch Sophon
10:20 PM	TEA	
11:00 AM	Vegetation: Background and progress to date	Andrew McDonald
	Status and trends: Vegetation	Thananh Khotpathoom
11:40 AM	Macroinvertebrates: Background and progress to date	Ian Campbell
	Status and trends: Macroinvertebrates	
12:20 AM	Fish: Background and progress to date	Prof. Ian Cowx
	Status and trends: Fish	Dr Chavalit Vidthayanon Dr Chea Tharith Chaiwut Grudpun Vu Vi An Dr Kaviphone Phouthavong
1:00 PM	LUNCH	
2:00 PM	Herpetofauna: Background and progress to date	Hoang Minh Duc
	Status and trends: Herpetofauna	Pich Sereywath
2:40 PM	Birds and mammals: Background and progress to date	Anthony Stones
	Status and trends: Birds and mammals	Dr Phaivanh Phiapalath
3:20 PM	TEA	
3:50 PM	Links and relationship to MRC Indicators	All
5:00 PM	Close for the day	

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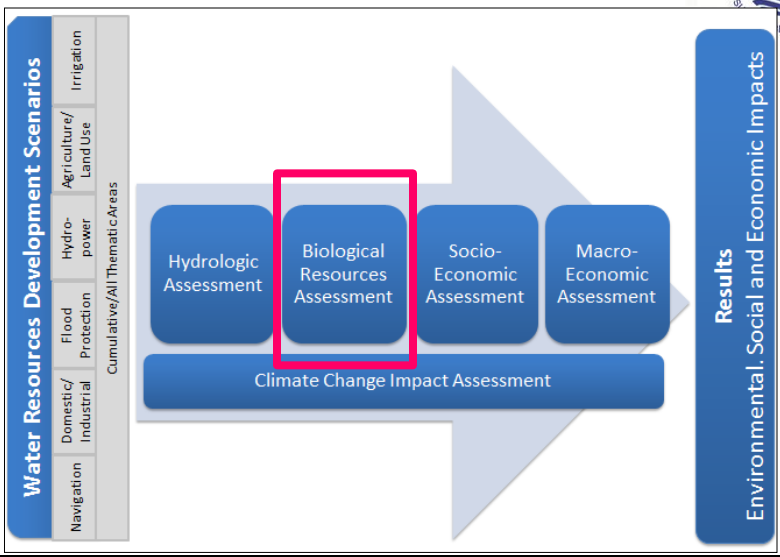
TUESDAY 7th July	TEAM MEETING: DSS	Presenter/Facilitator
8:00 AM	Explanation of activities for the day	Cate Brown
8:10 AM	Photographs and hydrology for FA1 and FA2	Team discussion
9:30 AM	Explanation of DRIFT DSS Navigation	Alison Joubert
10:00 AM	TEA	
10:30 AM	Hand-out of DSS	Alison Joubert
10:40 AM	Discipline-specific Response Curves – FA 1/2.	All
12:30 PM	LUNCH	
1:30 PM	Discipline-specific Response Curves – FA 1/2.	All
3:20 PM	TEA	
3:50 PM	Discipline-specific Response Curves – FA 1/2.	All
4:00 PM	Hand-in work to date	To Alison Joubert

- Each team organise themselves
- Data projectors
- Flip charts

MRC Council Study: BioRA Introduction

The Council Study



Objective of BioRA

To provide clear and comparable information on the impacts of proposed thematic developments on the aquatic resources of **main-stem** Lower Mekong River, inclusive of the Tonle Sap Great Lake and the Mekong Delta.

DRIFT

Downstream Response to Imposed Flow Transformation

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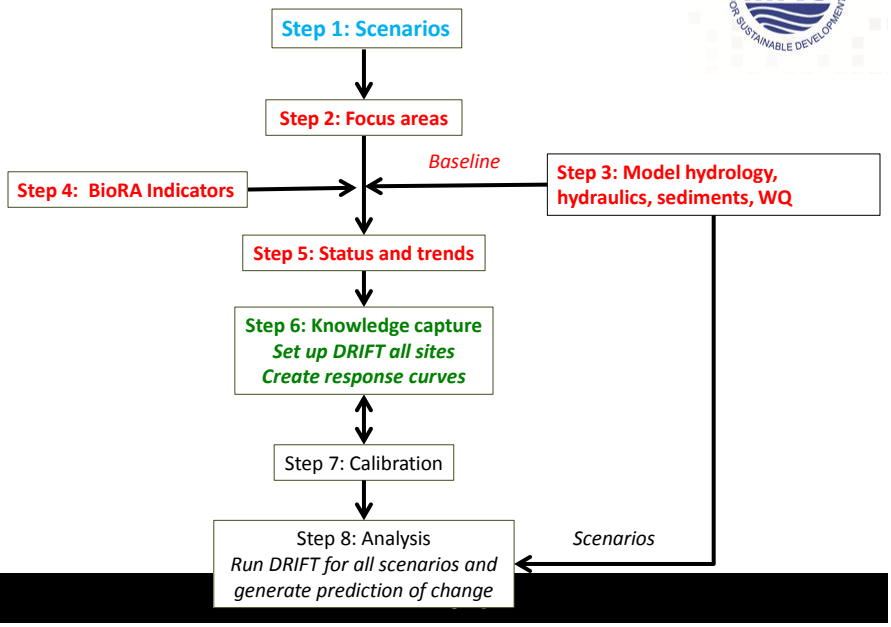
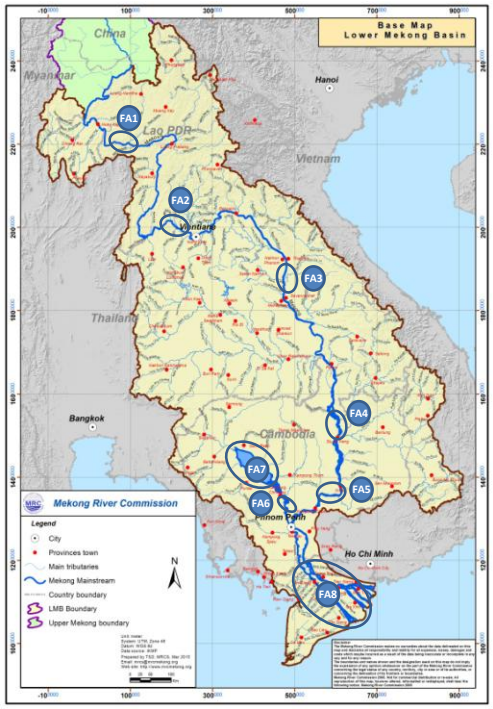
Main steps in BioRA





BioRA Focus areas (FAs)

Reference data set

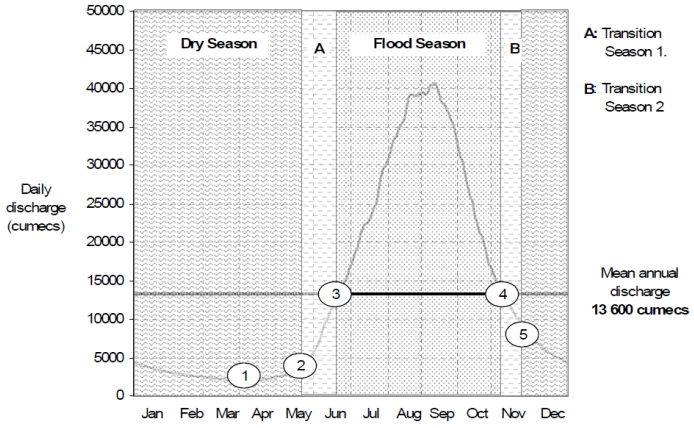
Reference data sets (modelled time-series)

- 1985-2008
- Measured data:
  - Hydrology relatively 'natural'
  - Sediments, WQ and others changed
- Prediction horizon = 24 years
- Scenarios will model different levels of development on 1985-2008 period
- Reference set in DSS:
  - 2007 Level of Development

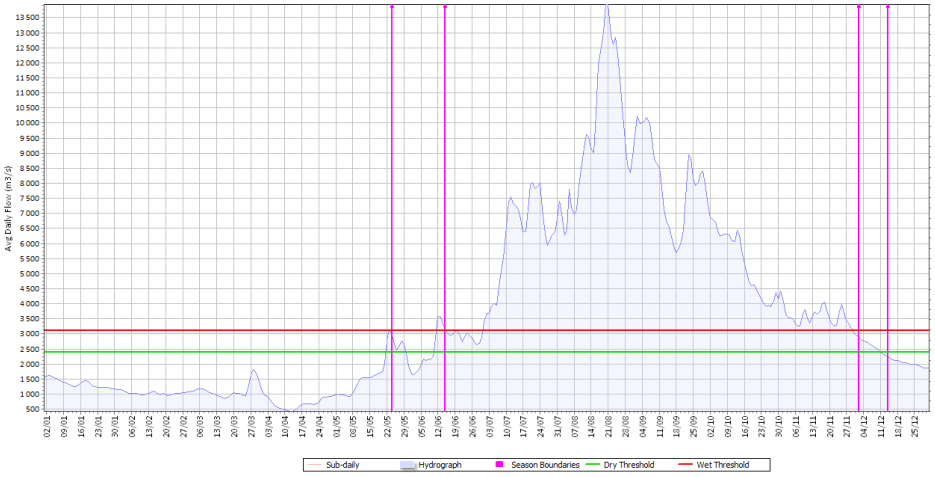
Flow time-series

- DRIFT divides **each hydrological year** into seasons based on flow thresholds:
  1. Dry season
  2. Transition season 1
  3. Flood season
  4. Transition season 2
- DRIFT calculates values for about c. 60 flow indicators for each site and scenario:
  - Onset of wet season
  - Volume in wet season
  - Duration of dry season
  - Minimum 5-day dry season flow
- Generates a time-series of annual values for each indicator

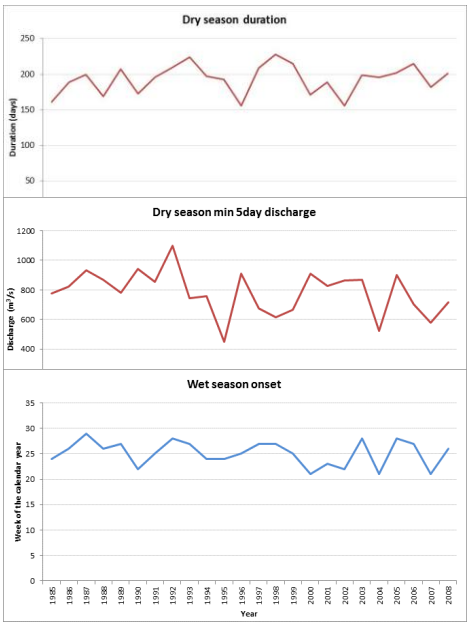
Definition of seasons – Adamson (2004)



Analysis of flow time-series



Analysis of flow time-series



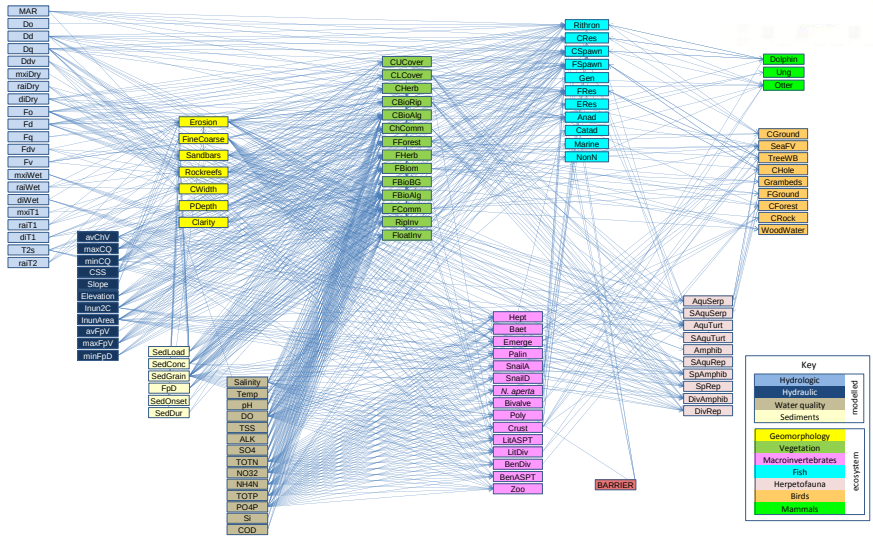
Sediment and WQ time-series

- DRIFT uses the **hydrological** seasons:
  1. Dry season
  2. Transition season 1
  3. Flood season
  4. Transition season 2
- Calculates:
  - Mean
  - Min
  - Max
  - Variations
- Generates a time-series of **seasonal** values for each indicator
- Lois will discuss further

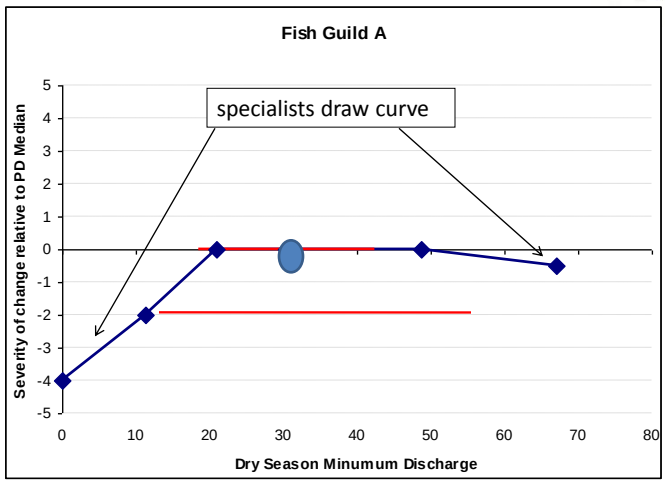
Knowledge Capture

- Response curves are the 'brains' of the DRIFT Model
- They are constructed by specialists
- They are created for each link
- A scoring system is used to capture the direction and magnitude of each response
- Some response curves address connectivity and/or other pressures, e.g., hunting pressure:
  - Will use status and trends results
  - Not included yet
- 200-400 response curves per site

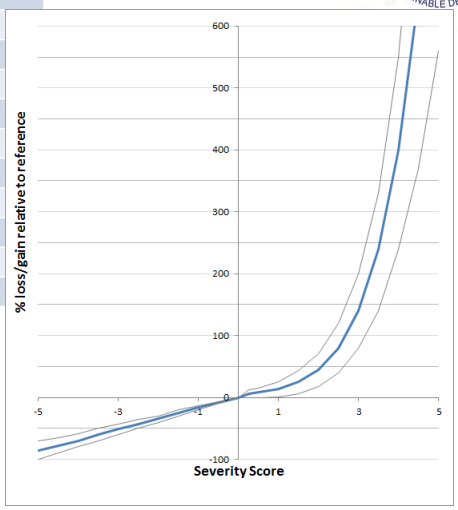
Indicators and Linked Indicators

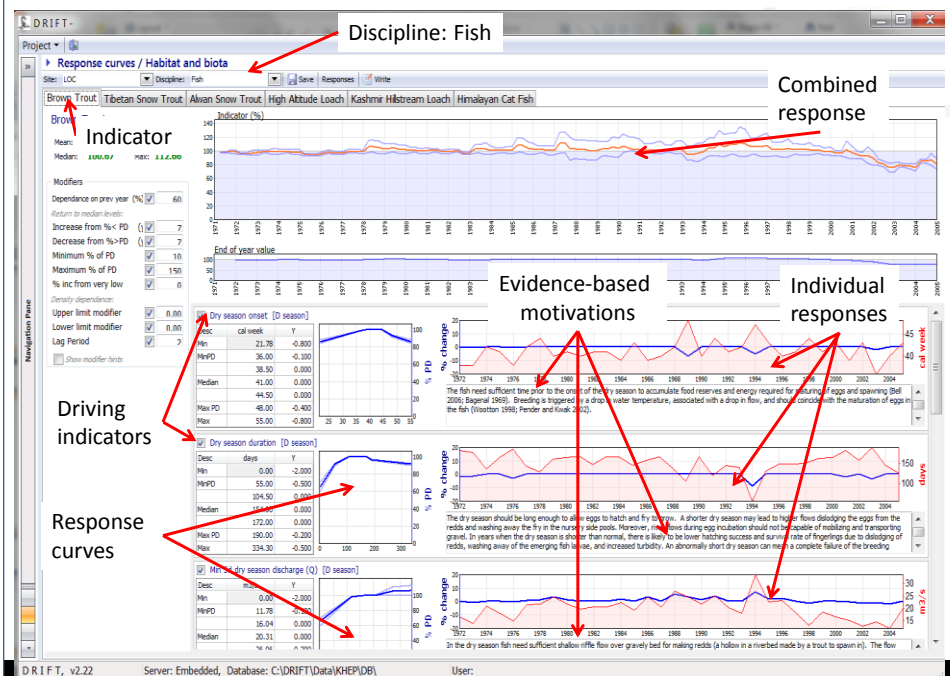


Example of a response curve – the response of one indicator to minimum dry-season flows in a year



Severity rating	Severity change	Equivalent Loss or gain
5	Very large	501-∞ (to pest proportions)
4	Large	251-500
3	Moderate	68-250
2	Low	26-67
1	Negligible	1-25
0	None	No change
-1	Negligible	0-20
-2	Low	20-40
-3	Moderate	40-60
-4	Large	60-80
-5	Very large	100-80

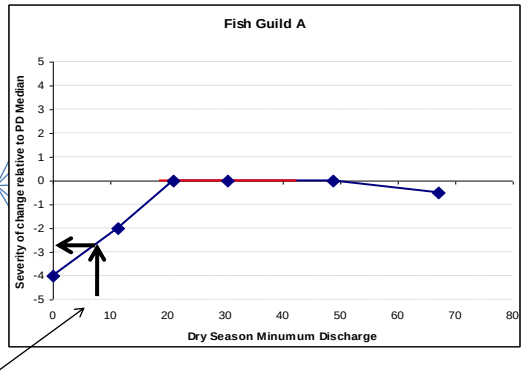




DRIFT operation

External modelled time series

Transformed into time series of DRIFT driving indicators

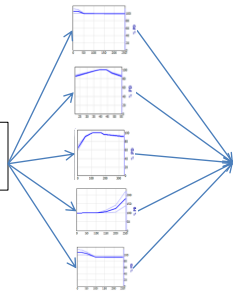


Scenario: Dry season minimum discharge for each year

External modelled time series

Each responding indicator

Transformed into time series of DRIFT driving indicators



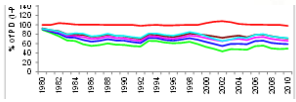
DRIFT prediction of change for each year

30 years of record = 30 values

Curves combined using multi-criteria decision analysis procedures

DRIFT predictions of change

Time series per indicator per site per scenario



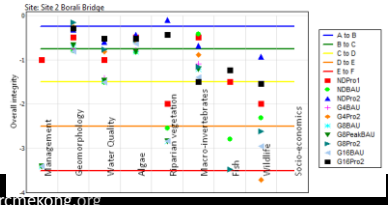
End value of indicator abundance

Alwan snow trout	-51.36	-51.22	-44.32	-41.80	-43.68
Kashmir hillstream loach	-45.61	-42.09	-31.61	-26.23	-27.19
Himalayan catfish	-40.09	-33.11	-28.14	-24.24	-24.01

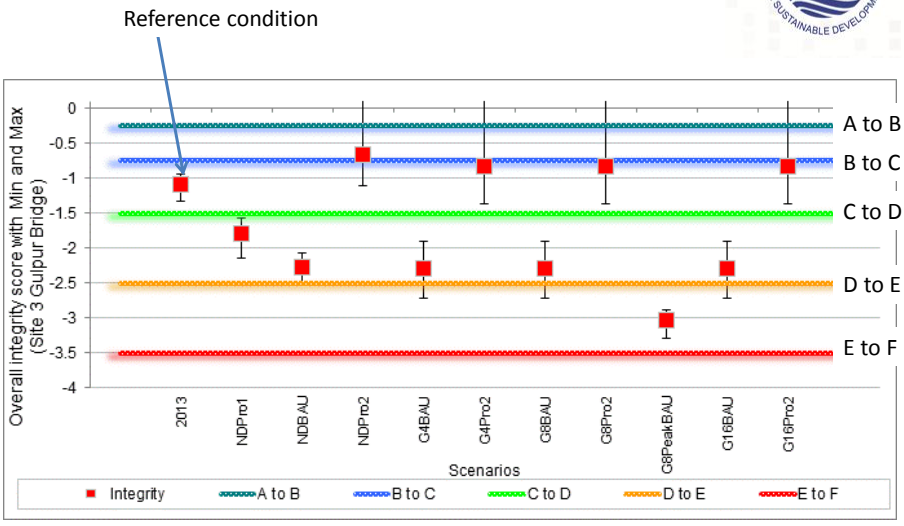
End value of indicator integrity

- 1.2 = moderately modified

End value of discipline integrity



End value of Ecosystem Integrity



Main specialist outputs of OSV July Meetings

- Revised BioRA indicator and links list
- Links to MRC indicators
- Trends and Status assessments
- Preliminary response curves and motivations: FA 1, 2 and 3:
  - Calibration sequences

Thank you