"Working Group on e-flows": mandato

- Comprensione comune delle e-flows e di come usarle nei RBMPs
- Deliverable: guidance EU sulle e-flows
- Tempistica: ott 2013 – ott 2014
- Ambito di applicazione: corpi idrici naturali

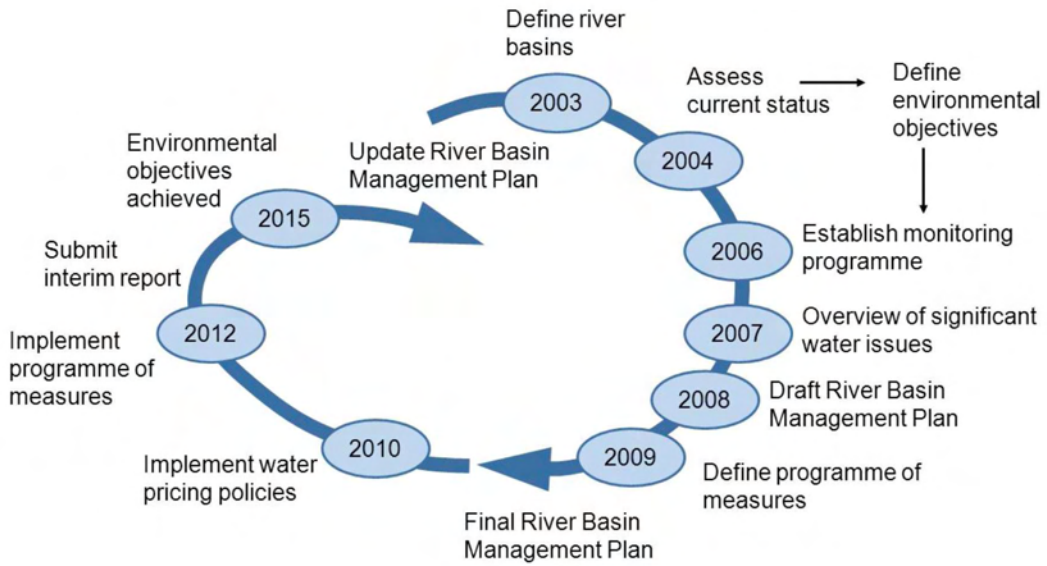
(Ambito ridotto per non interferire con il lavoro attualmente in corso su HMWB e GEP nel gruppo ad hoc all'interno di ECOSTAT)

E-flows guidance

https://circabc.europa.eu

Principali argomenti

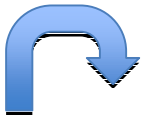
- Setting the scene
- Eflows in status assessment and environmental objectives
- Assessment of hydrological pressures and impacts
- Establishment of monitoring programmes
- Defining e-flows and analysing the gap with current situation
- Measures for the achievement of ecological flows
- Heavily modified water bodies and exemptions
- Public Participation
- Appendix
- Case Studies



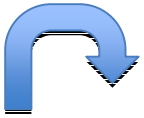
ENVIRONMENTAL VS ECOLOGICAL FLOWS

>> 200 definizioni di e-flows in letteratura

Soglia su portata minima tollerabile (es. DMV statico)



Esigenze idrologico/idrauliche di una particolare specie o comunità



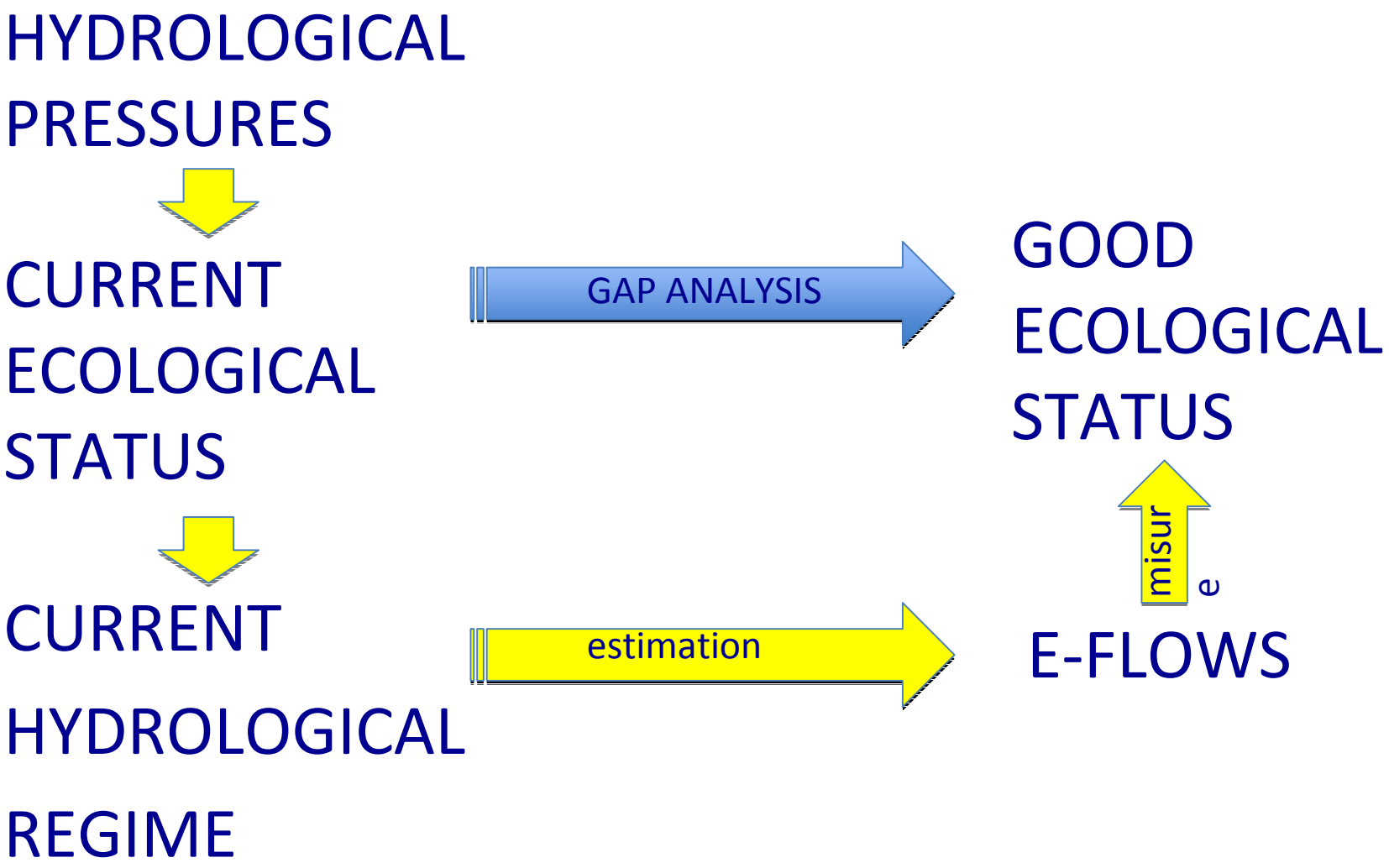
Regime idrologico che garantisca la sussistenza deglii ecosistemi acquatici e dei servizi ecosistemici che la società ritiene più rilevanti, dopo negoziazione con tutti I diversi portatori di interessi

Working definition**:**

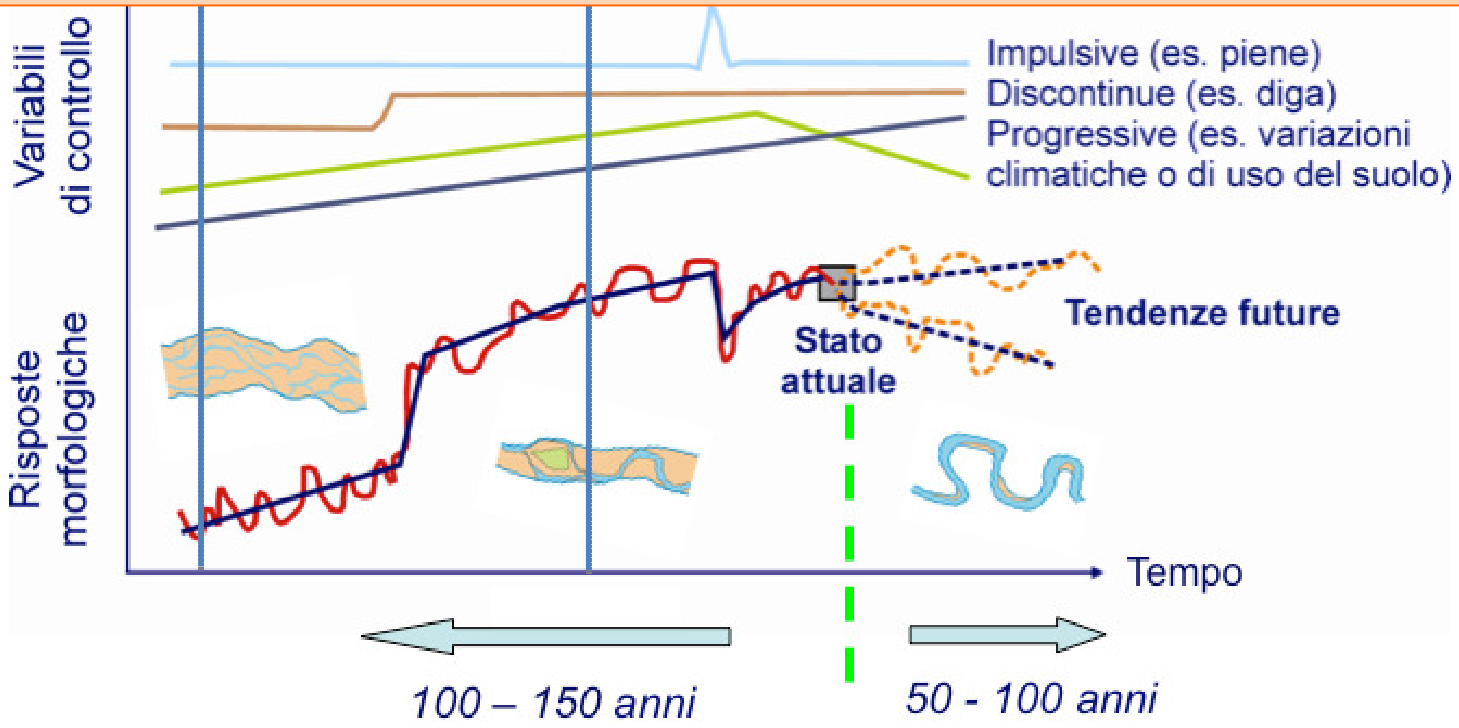
ecological flows: the flow regime consistent with the achievement of good status of water bodies

Ecosystem water needs only

WFD (Hydrological?) cycle + Objectives!



- Regime di riferimento collegato a nuovo assetto
- Necessità di conoscenza dei processi geomorfologici: evoluzione passata, tendenze future
- Necessità di formare basi conoscitive per valutare le correlazioni acqua-sedimento-biota necessarie a determinare le e-flows e le strategie ad esse collegate



2.Pressioni e impatti idrologici

Term	Definition
Driver	An anthropogenic activity creating a water demand that may affect the hydrology such as agriculture (irrigation), industry, water supply, electricity production, etc.
Pressure	The direct effects of the drivers such as abstraction and impoundment of water to satisfy the water demand: • steady abstraction (e.g. groundwater and surface water abstraction, and run-of-river hydropower dam); • seasonally varying abstractions (e.g. spray irrigation); • direct supply reservoirs for water supply; • regulating reservoirs for water supply, hydroelectric power generation, other water uses of flood mitigation; • water transfers to other water bodies, subcatchments, river basins or river basin districts; • pumped storage reservoirs.
State	Effects of the pressures on the physical environment: • direct hydrological effects that result from the pressures; • hydraulic effects that result from hydrological changes; • direct or indirect geomorphological effects (incl. erosion-sedimentation); • changes in water quality (e.g. temperature, nutrient and sediment loads); • combination of these (alongside other physical-chemical properties), creating the habitat state in which aquatic organisms live which is the principal link between the pressures exerted by human water use and aquatic organisms.
Impact	Responses of individual organisms, populations and communities and ecosystem functions; Impacts on other water or water body uses (abstractions, recreational, navigation, angling, etc.); Changes in landscape (and its perception), and associated secondary effects.
Response	The measures taken to improve the state of the water body, such as e-flows, overall water allocation and specific abstractions rules, dam flow/sediment management rules, or other non-hydrological measures, such as habitat improvement)

3.Monitoraggio idrologico

Secondo la WFD è FONDAMENTALE e quindi: obbligatorio sempre (Annex V WFD)!

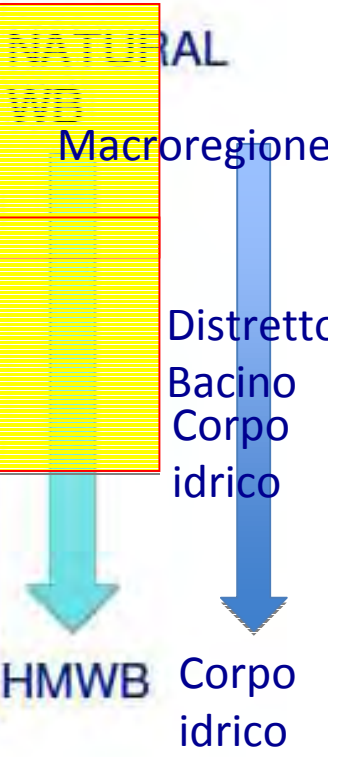
- In sorveglianza, supporta anche l'analisi delle variazioni nel lungo termine (es. impatti CC)
- In operativo, assieme a quello morfologico e biologico, supporta la valutazione delle alterazioni e degli effetti delle misure messe in atto

Necessità del monitoraggio idrologico (inclusi i prelievi) per una gestione flessibile delle risorse idriche!

4. Metodi per la stima delle e-flows

Pro e cons, campo di applicazione

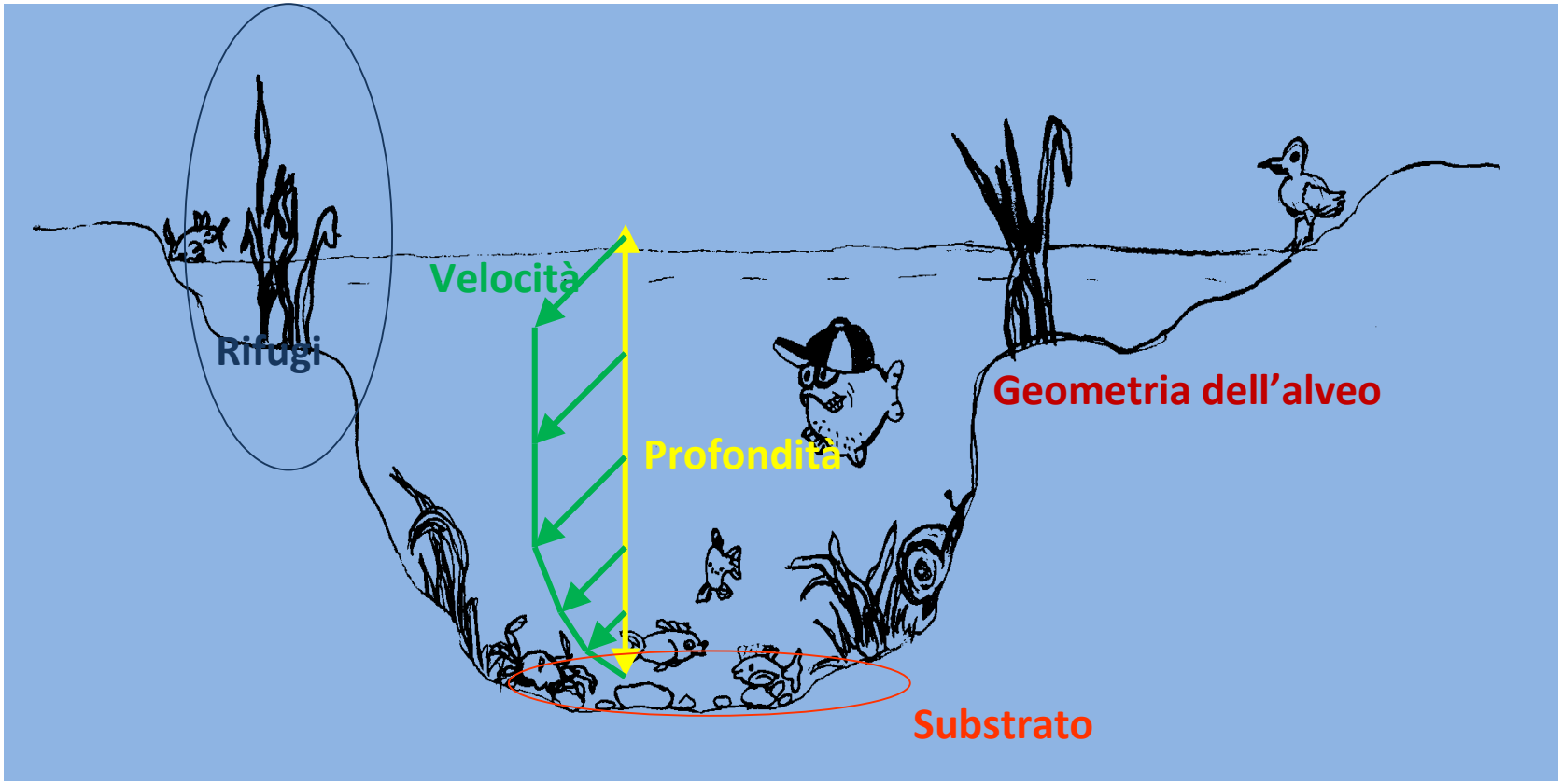
Methodology category	General purpose	Scale	Duration of assessment (months)	Relative costs	Relative frequency of use
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Other	Examination of flows in an expert opinion workshop leading to recommendation of flows for all components of the river ecosystem, including societal and recreational uses	Whole rivers, applicable for regional or river specific scales	12-36	€€€ - €€€€	? (increasing)?



Regime idrologico>morfologia>habitat…biota!

$\Delta Q>0 = \Delta h, \Delta L, \Delta v, \Delta A$ Area bagnata = unità di habitat disponibile

% alveo bagnato nel tempo = disponibilità spazio temporale di habitat



Parametro diretto, misurato quantitativamente: metodi quantitativi sulla disponibilità spazio-temporale di habitat (es. Vezza et al. 2014) possono supportare direttamente il processo valutativo WFD.

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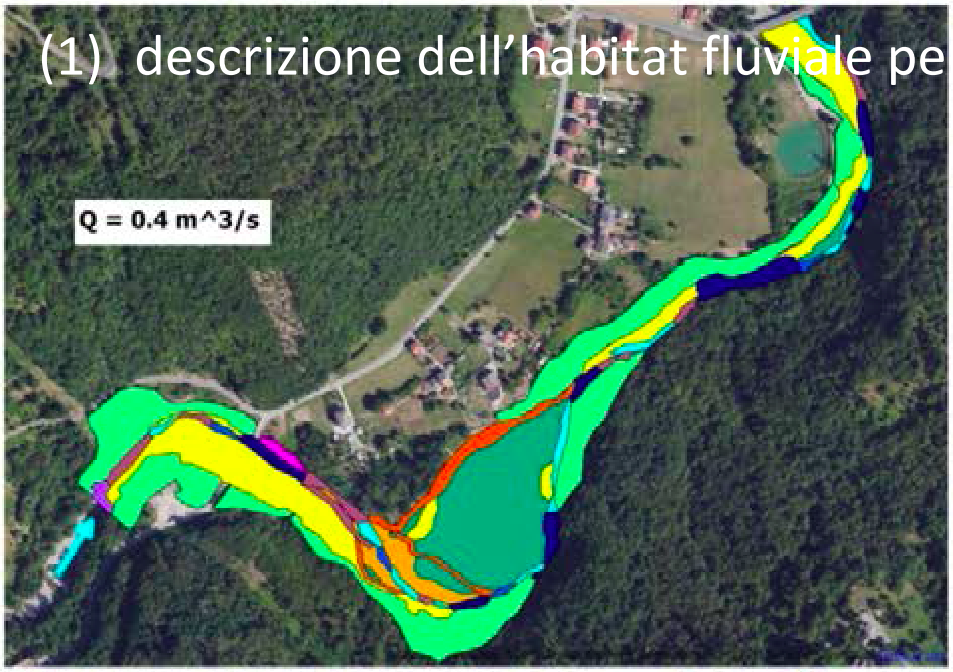
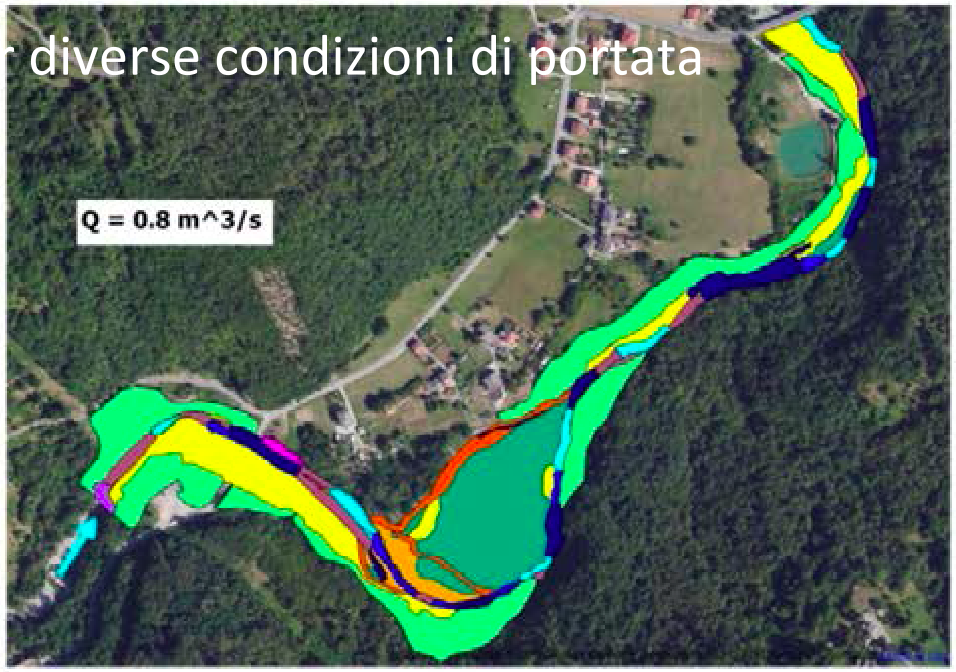
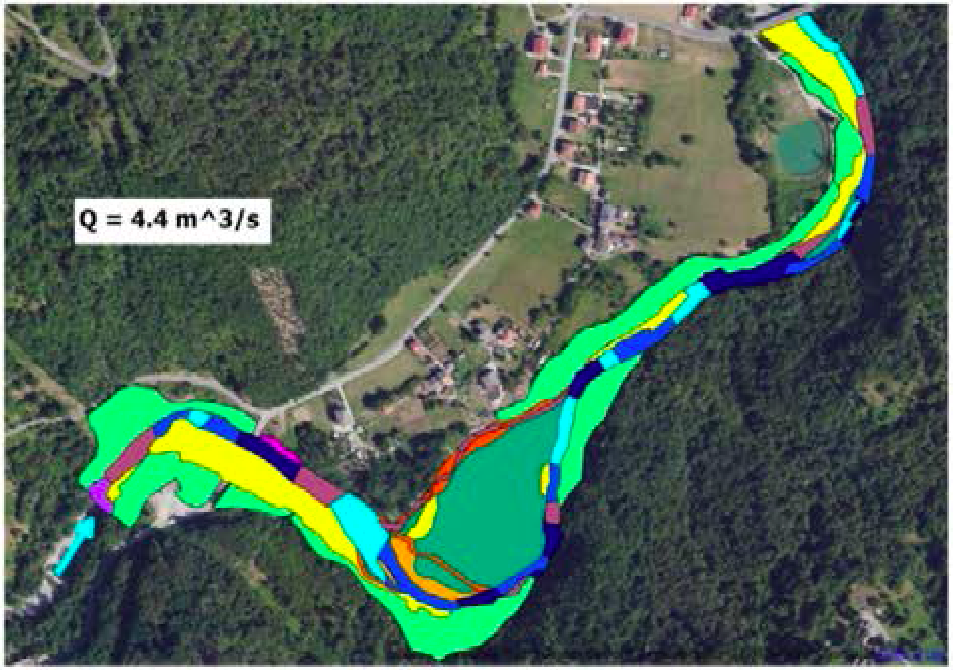
(1) descrizione dell'habitat fluviale per diverse condizioni di portata







Legend

F. Taro

- CP - *plunge pool*
- CP - *pool*
- CR - *rapid*
- CF - *riffle*
- CG - *glide*
- EC - barra centrale
- EA - barra laterale
- FM - *bench*
- ED - canale emerso
- VI - isola
- F - zona ripariale

Classificazione SUM (ISPRA 2015)

0 100 200 300 400 m

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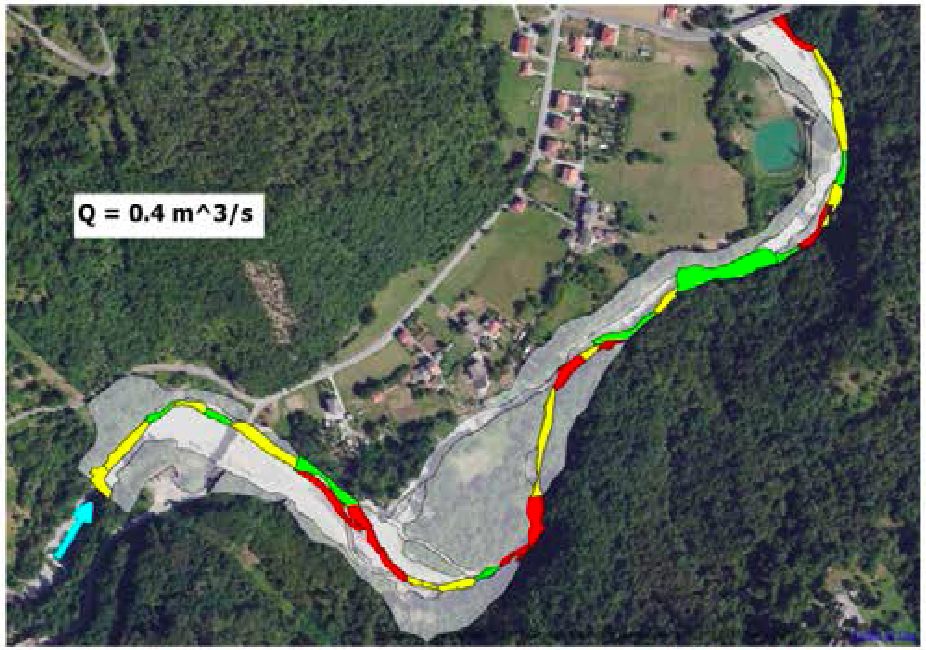
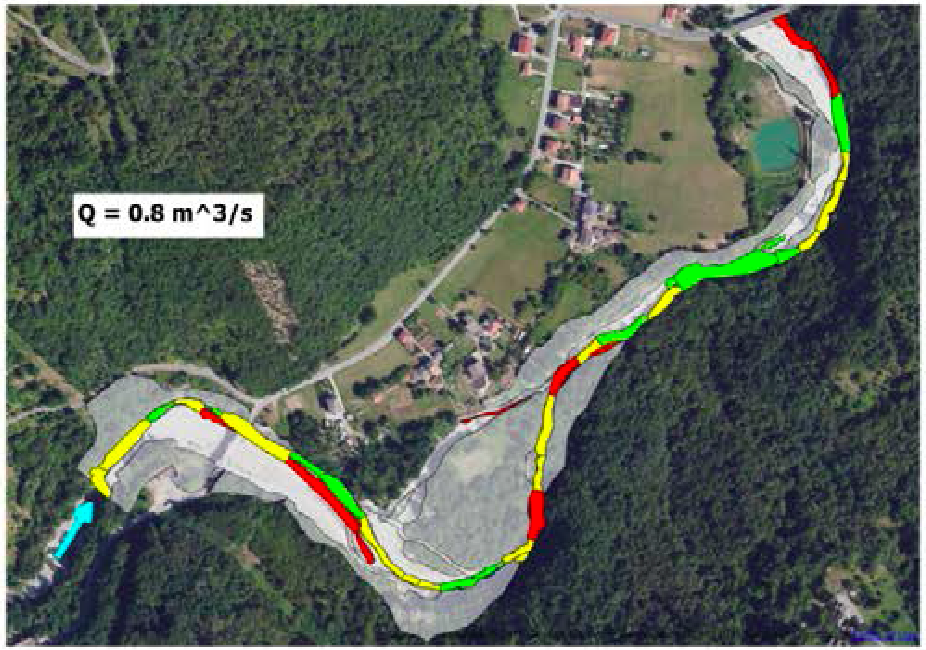
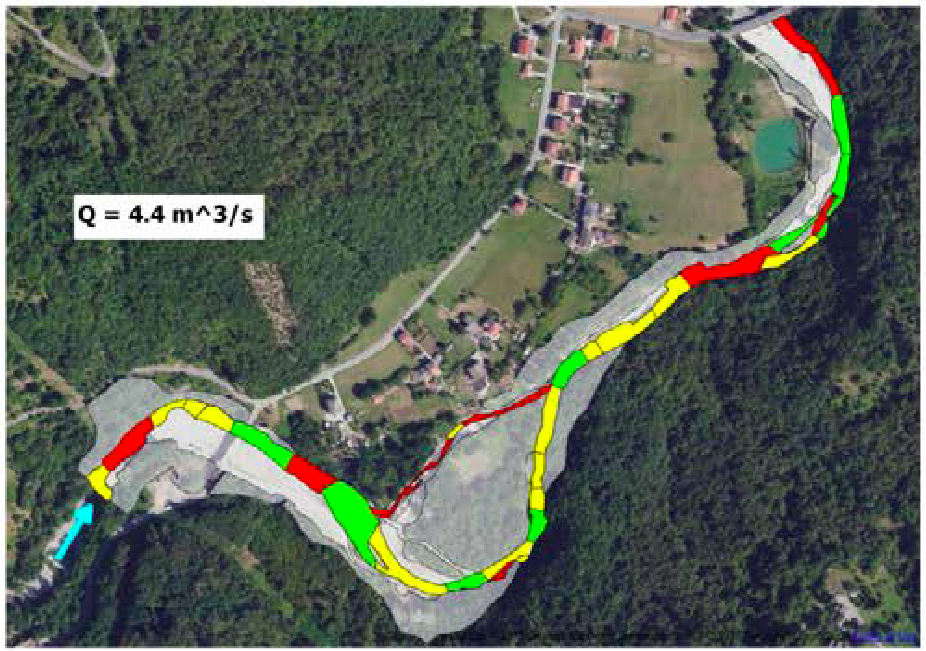
2. applicazione dei modelli biologici di idoneità d'habitat







Legend

F. Taro

Non idoneo

Idoneo

Ottimale

0 100 200 300 400 m

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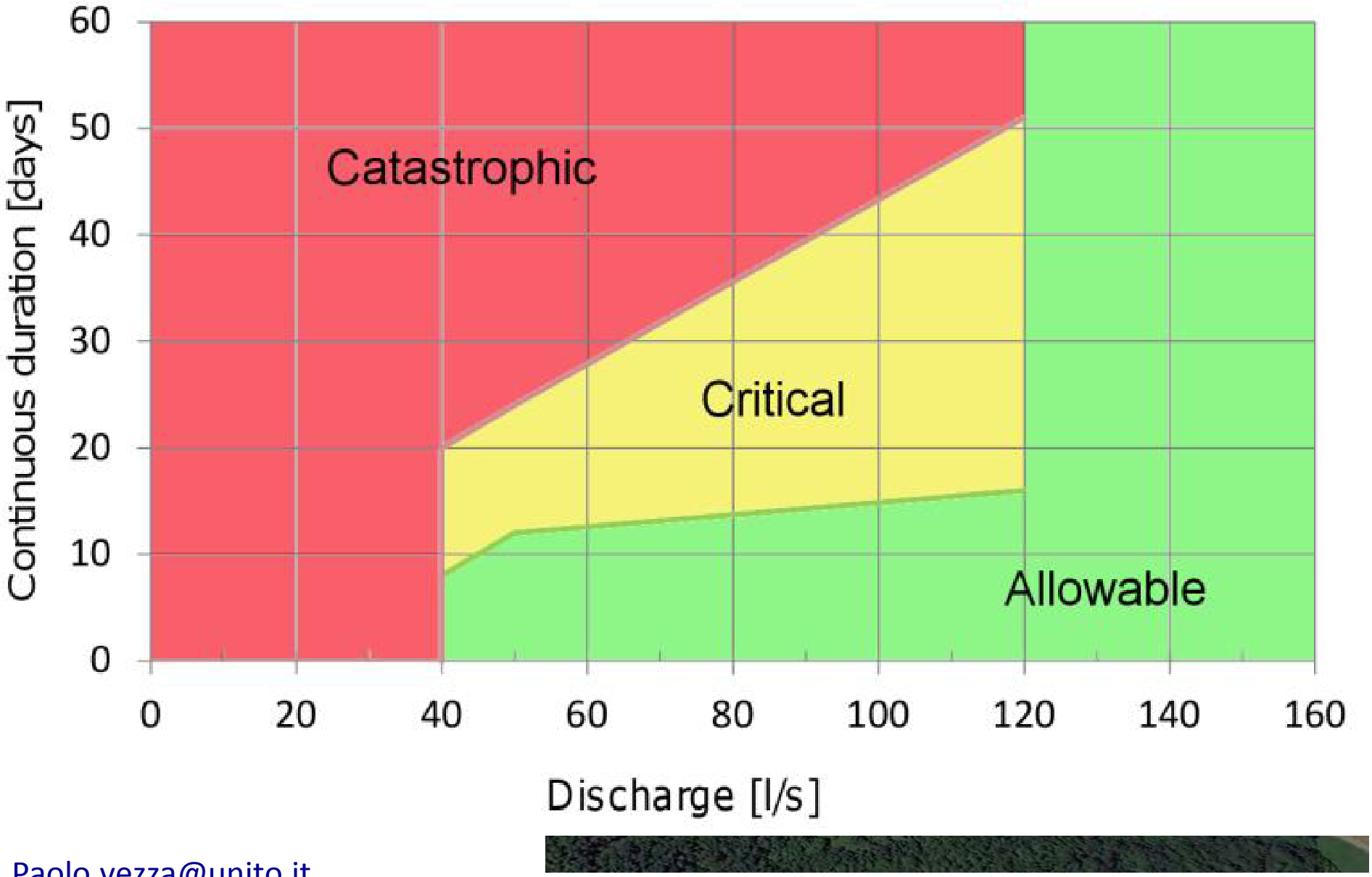
3. IH – Indice di integrità dell'habitat



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IH tat

Tabella A4.1 - C

ISPRA
Istituto Superiore per la Protezione e la Ricerca Ambientale

SUM
Sistema di rilevamento e classificazione delle unità morfologiche dei corsi d'acqua

122 / 2015

MANUALI E LINEE GUIDA

4. Metodi per la stima delle e-flows

Pro e cons, campo di applicazione

Methodology category	General purpose	Scale	Duration of assessment (months)	Relative costs	Relative frequency of use
Idrologici	Examination of historic flow data to find flow levels that naturally occur in a river and can be considered "safe" thresholds for flow abstraction	Whole rivers, applicable for regional assessments	1-6	€	+++
Idraulici-Habitat	Examination of change in the amount of physical habitat for a selected set of target species or communities as a function of discharge	Applied at a study site / river segment scale, upscaling to whole river basin based on the assumption of "representative" site conditions	6-18	€€	++
Olistici	Examination of flows in an expert opinion workshop leading to recommendation of flows for all components of the river ecosystem, including societal and recreational uses	Whole rivers, applicable for regional or river specific scales	12-36	€€ - €€€	+(increasing)

Necessità di dati idromorfologici consistenti per avere stime di e-flows con grado accettabile di incertezza!

Criticità e conclusioni

- Mancanza di dati hymo limita la stima delle e-flows: necessità monitoraggio hymo!
- Non considerazione dinamica sedimenti nella stima e-flows mina raggiungimento obiettivi ambientali: non disaccoppiare hy-mo!
- Mancanza di conoscenze sulle relazioni quantitative tra press/misure hymo e risposta biologica: più monitoraggio hymo e bio ..(FP7 REFORM: www.reformeurivers.com)

- Bilancio idrico in tempo quasi-reale per modificare rapidamente ed efficacemente le strategie di gestione regime idrologico!

Ecological flo

Ecolog
in the implem
Water Frame

December 2014

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Istituto Superiore per la Protezione
e la Ricerca Ambientale

SUM
Sistema di rilevamento e
classificazione delle
morfologich




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MANUALI E L GUIDA

GRAZIE PER L'ATTENZIONE