

Breakout Workshop #4

Remote Sensing of Inland and Coastal Waters: Current Status, Challenges, Research Priorities, and End-User Engagement

COMMUNITY DISCUSSION - 3

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Q3. Sensor Characteristics

Q3A. From an end-user standpoint, what are the minimum values desired for **spatial resolution**, **spectral resolution**, **temporal revisit cycle**, and **radiometric performance**, and which among these three would you sacrifice to improve the others?

Q3. Sensor Characteristics

Q3B. Based on current capabilities & priorities, what would be the desired characteristics of a future sensor for inland and coastal remote sensing?

	Threshold (Current/nearfuture capabilities)	Target	Desired (dream)
Spectral resolution	4 -7 bands within 400- 800nm (Landsat-8/9 + Sentinel-2 A/B/C/D) 21 bands within 400 – 1020 nm at ~10 nm (Sentinel-3A/B/C/D)	> 20 bands at 10-20 nm? within 350-850nm?	Many bands at ~ 5 nm? within 350-850nm?
Spatial resolution	10, 20, 30, 60, 300 m	10 m?	< 10 m?
Radiometric requirement	SNR (440) < 400 & SNR (660) < 100	SNR (400-700) ~1000	SNR (350-800) ~1000
	onboard calibration and stability monitoring	+ suited for minimum radiances	+ + multiple solar diffusers
Revisit time	~2 days	Daily?	Diurnal?

* **Target** is defined as the value above which further improvement would provide little or no improvement

Q3. Sensor Characteristics

Q3C. Considering the trade-off amongst the various sensor design parameters, what is the best approach for designing a sensor for inland and coastal waters?

- ❖ one expensive, “dream sensor” that has the best combination of all design parameters (i.e., the finest spatial and spectral resolutions and the highest SNR possible)? Or
- ❖ a set of “budget, piggy-back, CubeSat-like” sensors, each of which may not individually have the best combination of all design parameters but can complement each other and, through image processing techniques, be used synergistically to derive data products that mimic data that would be collected by a “dream sensor”?

Q3. Sensor Characteristics

Q3D. How important is data product continuity (vs. improved estimates of biophysical parameters using newer algorithms) and how should that influence future sensor design considerations?

- ❖ Can future hyperspectral missions reproduce current products (if any)?

Q3. Sensor Characteristics

Q3E. What can we do as a community to improve product consistency across data from multiple sensors?

❖ Data sharing?

Q3. Sensor Characteristics

Q3F. What are the agencies' responsibilities to ensure consistency amongst their products?

- ❖ Follow IOCCG guidelines or science reports for sensor specifications and coordinate pre-launch calibration activities?