

Question	Concept	Data	Potential Data Sources	Model Examples
What are the locations of human settlements and developments? How many people will need to be relocated as flood plains evolve in response to changes from development of new dams?	The relationship between demographics and impacts to the natural resource base can be complex. A combination of models and observations is needed to develop alternative management strategies.	Socio economic estimates and projections, estimates/projection of population size, density Downscaled climate projections (Temperature and precipitation at~50 km) In situ hydro-met Remote sensing observations of precipitation, soil moisture, ET, vegetation	NASA-SEDAC Socioeconomic and population, Night-time Light Remote Sensing, ORNL LandScan TBD Climate (IPCC5) Mekong HYCOS APR-2, PALS, TRMM, GPM, AMSR-E, SMAP, MODIS, ASTER	MRC DSF (SWAT, IQQM and ISIS) VIC MIKE suite MRC WUP-FIN suite
What is the total sediment yield for the Mekong, where are sediments coming from, where are they going, and how will they change (in the delta and along the entire Mekong River System) for both the monsoon and dry seasons in response to a) future development pressures, b) climate change?	Characterize suspended sediment mass and transport of the Mekong River System. Evaluate impacts of climate change on the physical system and sediment transport.	Bio-optical properties (turbidity, suspended sediment, dissolved organic matter) River stage, channel geometry, water flow and surface roughness, velocity and flow paths Downscaled climate projections (Temperature and precipitation at~50 km) In situ hydro-met and water quality	AVIRIS, PRISM, ASTER, Landsat, MODIS, VIIRS UAVSAR, InSAR TBD Climate (IPCC5) WQMN, Mekong HYCOS	MRC DSF (SWAT, IQQM and ISIS) VIC MIKE suite MRC WUP-FIN suite
What are the impacts of the new dams on the distribution and variability of flood plains in the Lower Mekong Basin? How do changes in these flood plains impact fish migration and capture fisheries up- and down-stream and across the floodplains and rice production and ecosystems in the delta?	Characterize annual flood cycles, floodplain channel geometry, and floodplain overbank flows. Characterize patterns and trends in fine spatial scale water temperature. Evaluate impacts of changes in temperature, timing and amount of flows on fisheries and agriculture.	Biomass, land use/land cover, greenness Surface temperature River stage, channel geometry, velocity and flow paths, inundation 30m DEM Land surface micro-topography In situ hydro-met and water quality	AVIRIS, UAVSAR ASTER, Landsat, MODIS, IceSAT MASTER, AVHRR, GOES, Landsat, MODIS, VIIRS AirSWOT, UAVSAR, InSAR SRTM LiDAR, UAVSAR WQMN, Mekong HYCOS	MIKE suite
What changes will the planned hydropower dams bring about to the hydrology of the river? What are the mean flows of the system, what are the seasonal mean flows (low flow, high discharge)?	Characterize annual flood cycles, patterns of high and low flows, and the yearly maximum and minimum flows.	River stage, channel geometry, water flow and surface roughness, velocity and flow paths, inundation. Precipitation Snow Cover/Extent Surface temperature In situ hydro-met	AirSWOT, UAVSAR, InSAR APR-2, TRMM, GPM ASO, AVIRIS, MODIS MASTER, AVHRR, GOES, Landsat, MODIS, VIIRS Mekong HYCOS	MRC DSF (SWAT, IQQM and ISIS) VIC MIKE suite MRC WUP-FIN suite
How will the morphology of the riverbed, banks, and delta change with time? What changes to riverbed and banks, what are the relative rates of erosion?	Characterize sediment related effects on downstream channels. Understand overall channel morphology and interaction between erosive flows and vegetation.	Bio-optical properties (turbidity, suspended sediment, dissolved organic matter) Biomass, land use/land cover River stage, channel geometry, water flow and surface roughness, velocity and flow paths, erosion and deposition Land surface micro-topography In situ hydro-met	AVIRIS, PRISM, ASTER, Landsat, MODIS AVIRIS, UAVSAR ASTER, Landsat, MODIS, IceSAT AirSWOT, UAVSAR, InSAR LiDAR, UAVSAR Mekong HYCOS	MRC DSF (SWAT, IQQM and ISIS) VIC MIKE suite MRC WUP-FIN suite