



**You are invited - Mass Balance Seminar**

**Martha N Garcia** to: NIC-HQ-IASG

Cc: Victor F Labson, Mark K Sogge, Marcia K McNutt

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Dr Victor Labson, the lead for the Mass Balance Team of the Flow Rate Technical Group will be giving a presentation at 1:00 pm next Thursday, June 24th on Mass Balance 101. I hope you can join us for this informative seminar. Kindly let me know if you can attend so we can arrange an appropriate space. I've attached a short summary of Dr Labson's presentation.

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<http://biology.usgs.gov> Labson Mass Balance 101.doc

## Mass Balance 101: Oil Budgets, Discharge Rates, and Available Oil

A “mass balance” is a widely used approach to accounting for the total amount of a material that enters and leaves a system. Mass Balance run in a forward direction starting from a discharge rate can be used to compute a daily and cumulative Oil Budget. Run in reverse, Mass Balance starts with an oil budget and computes a Discharge Rate. The two are the same if all sources of available oil are accounted for and all losses are quantified.

The daily updates for the Deepwater Horizon oil spill generate an “oil budget.” This involves determining the amount of oil flowing from the riser, then subtracting out what is removed by various techniques or natural processes. The difference that remains represents oil that is still available on the surface (or subsurface) and that may impact natural and economic resources in the Gulf.

Some factors are directly measured; others are estimated based on particular assumptions with some level of uncertainty. Different agencies or organizations are responsible for reporting the various components used in the calculation.

The overall oil balance estimate can change over time as we refine our knowledge of any one of the components in the equation.

The daily and cumulative oil budget estimate differs from the mass balance calculations and report generated by the FRTG Mass Balance Sub-team, which were based a one-time (May 17, 2010) estimate of the total amount of surface oil in the Gulf. The surface oil was measured by the NASA Airborne AVIRIS (Airborne Visible/Infra-Red Imaging Spectrometer) and the MODIS (MODerate-resolution Imaging Spectroradiometer) satellite. This measurement of available oil was used to back-calculate through a process similar to the oil budget and using similar assumptions to arrive at an estimate of the minimum average daily flow rate for the preceding period, as described in the May 27<sup>th</sup> FRTG preliminary report.