The probability model is validated using historical datasets. DUACS products are used to take into account actual coverage on ocean (Fig. 2) platform/payload events, science data loss, bad data edited out... The agreement between the model prediction and the reality observed on actual data is good (Fig. 3) whereas the theoretical coverage (not taking into data loss) is very optimistic. The comparison shows two significant differences : the post-launch anomalies on GFO (unusable until 2000), and the unexpected longevity of T/P. In both cases, the event is against the base probability assumption given to the satellite : 100% success rate at launch, and 2.2 ° lifespan max. Better probability models can be used: boolean branching and better lifespan characterization...

In this paper we use a probabilistic model to better assess the odds of having an observing system (multiple altimeters) accurate enough to provide the input measurements needed for NRT applications.

Combinatorial probabilities are then computed based on each individual probability function. Altimeters are also grouped by ground track (redundant measurements are not stacked). This model is important when operational oceanography and NRT applications start to be fruitful that NRT altimeter data may be lacking.

Considering the cost and effort involved in a new altimeter, it might prove useful to optimize launch schedule and choices/tradeoffs in terms of mission operation. The probabilistic model was used to explore alternate scenarios to assess the impact of various decisions on the minimum observability needed for Near Real Time applications and operational oceanography.

As an illustration, shifting Jason-1 on a different orbit (tandem phase, similar to the Jason/TP phase in 2003/2005) would improve the NRT odds by 20% (Fig. 5). The cross-calibration of both Jasons is mandatory, but if the tandem phase does not start six months after launch, the odds of getting the minimum NRT data reach 0%. Similarly, an additional 20% chances can be gained if CryoSat data are fully exploited (Fig. 6) with a complete coverage on ocean, and better geophysical corrections/references : improved MSS to balance out the non-repetitive ground track, ionosphere correction based on the merging of GPS and DORIS data (onboard all altimeter platforms) and wet troposphere correction based on the multi-mission merging of external radiometer data...

As far as new missions and new instruments are concerned, it is important to schedule Jason-3 as soon as possible to consolidate the NRT data sampling (Fig. 7), and before the first S3 launch a Wide Swath Altimeter would prove precious even with very pessimistic error budgets (Fig. 8).