Exfloat Prototype Programming

(Provided by Phil Lovell @ U. of St. Andrews)

Phase 0: Wait for 24 hours to allow for installation at depth.

Phase 1: Monitor the depth every second waiting for the release to begin.  Record a sample (depth, temperature, PAR, angle) every 30 mins.  Each group of 4 samples is stored as a message for later transmission (1 message per 2 hours – approx 168 messages will be created in 14 days). The release is detected when the short-term median is more than 2m shallower than the long-term median.

Phase 2: Sample at 4 Hz during the ascent (depth, temperature, PAR, angle).  Each group of 4 samples is stored as a message for later transmission (1 message per second – between 300 and 900 messages will be created in 5-15 mins). The ascent is terminated when the short-term median is less than 2m shallower than the long-term median.  This phase must last for at least 5 minutes and no more than 15 minutes, regardless of the depth reading.

Phase 3: Remain at/below the surface for 14 days without transmitting.  Record a sample (depth, temperature, PAR, angle, wet-dry) every 30 mins.  Each group of 3 samples is stored as a message for later transmission (1 message per 1.5 hours – 224 messages).

Phase 4: Begin to transmit the stored messages at random at 40 second repetition rate.  Battery life should be about 45 days. Continue to record a sample (depth, temperature, PAR, angle, wet-dry) every 30 mins.  Each group of 3 samples is added as a new message available for transmission (1 message per 1.5 hours – up to 710 messages).