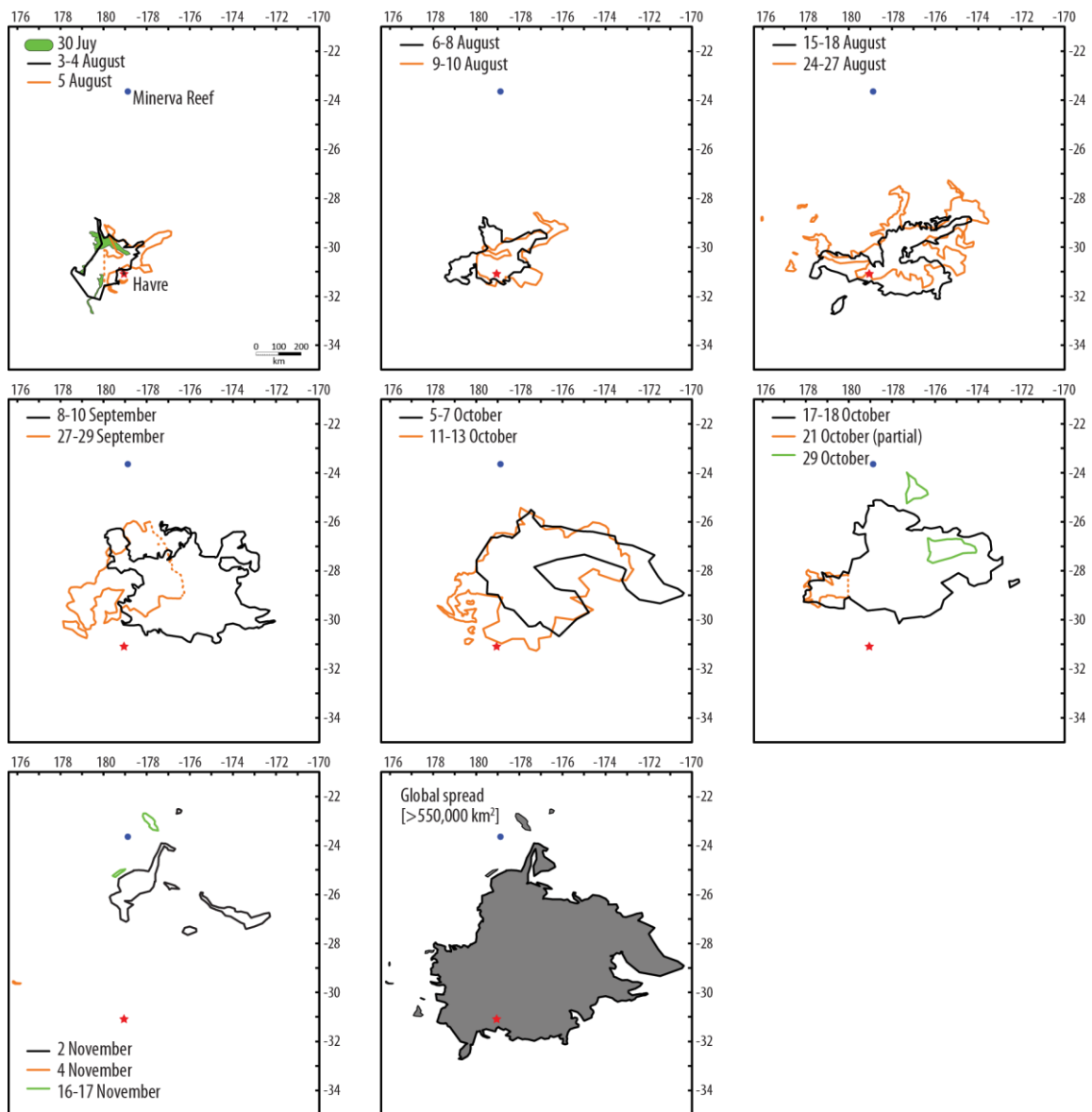
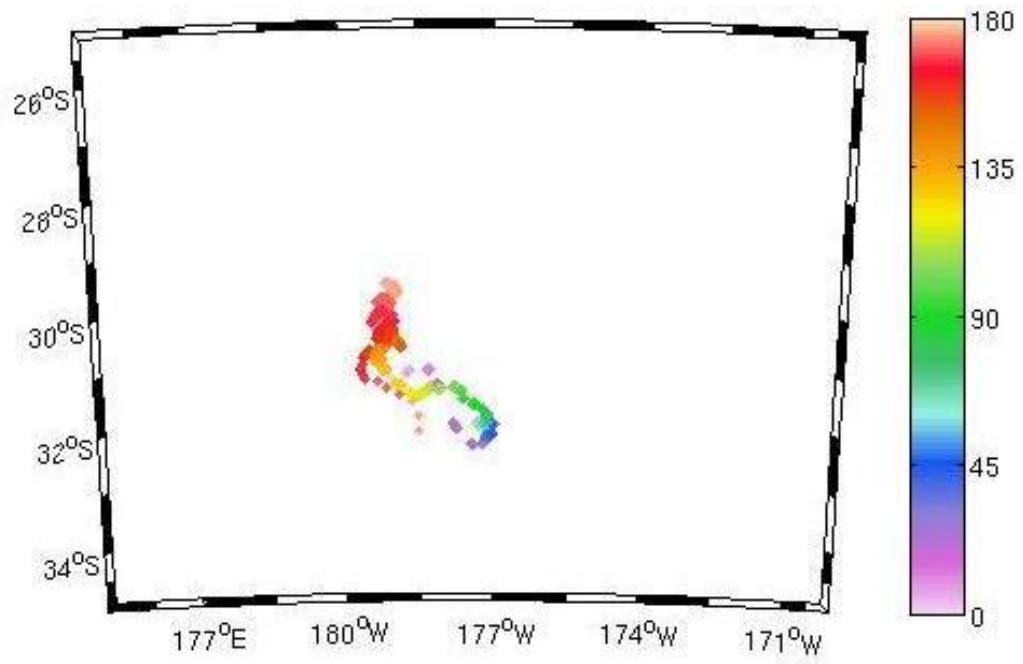


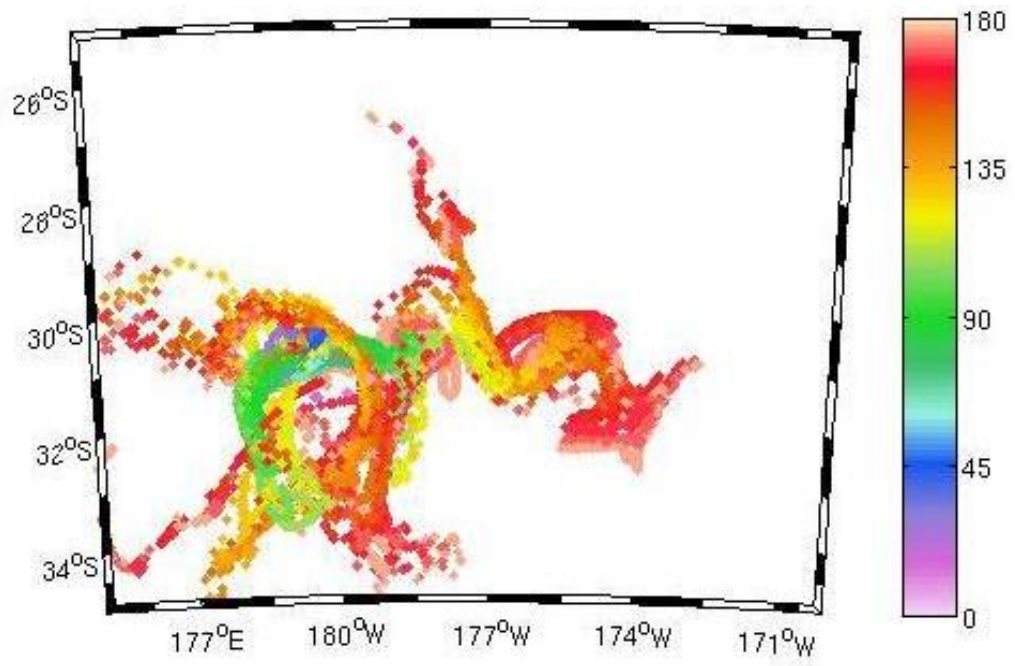
**Supplementary Fig. 1** Detailed sequence of the Havre pumice raft, from analysis of MODIS images for July 2012. All times in UTC. Cloud cover may reduce raft and plumes visibility.



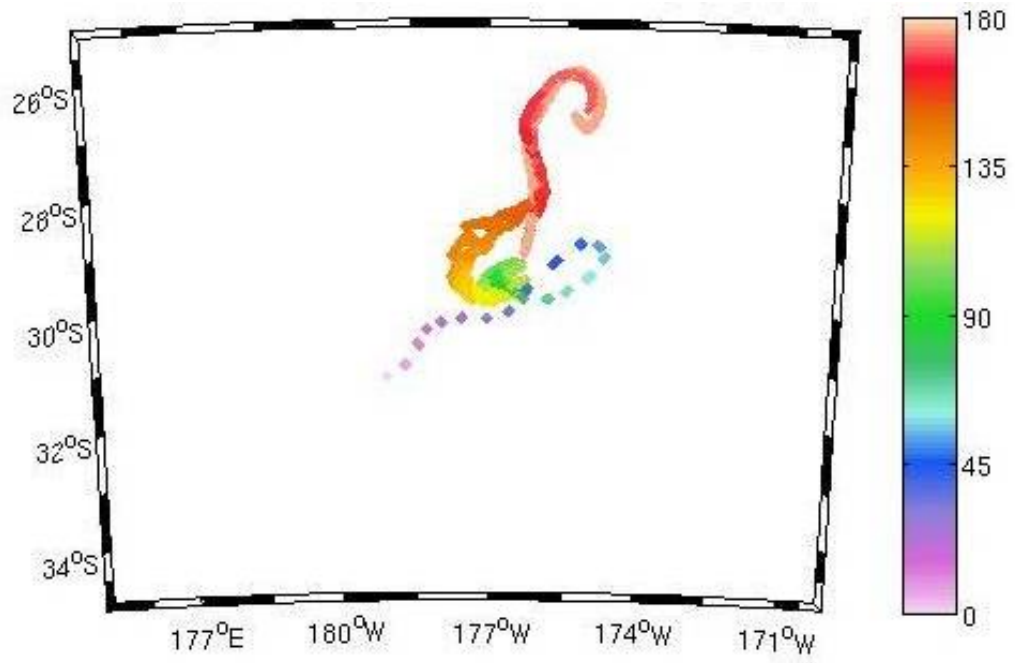
**Supplementary Fig. 2** Sequence of the Havre 2012 pumice raft, from analysis of MODIS images for August–November 2012. Polygons represent global area where rafts are present. All times in UTC. Cloud cover may reduce raft visibility.



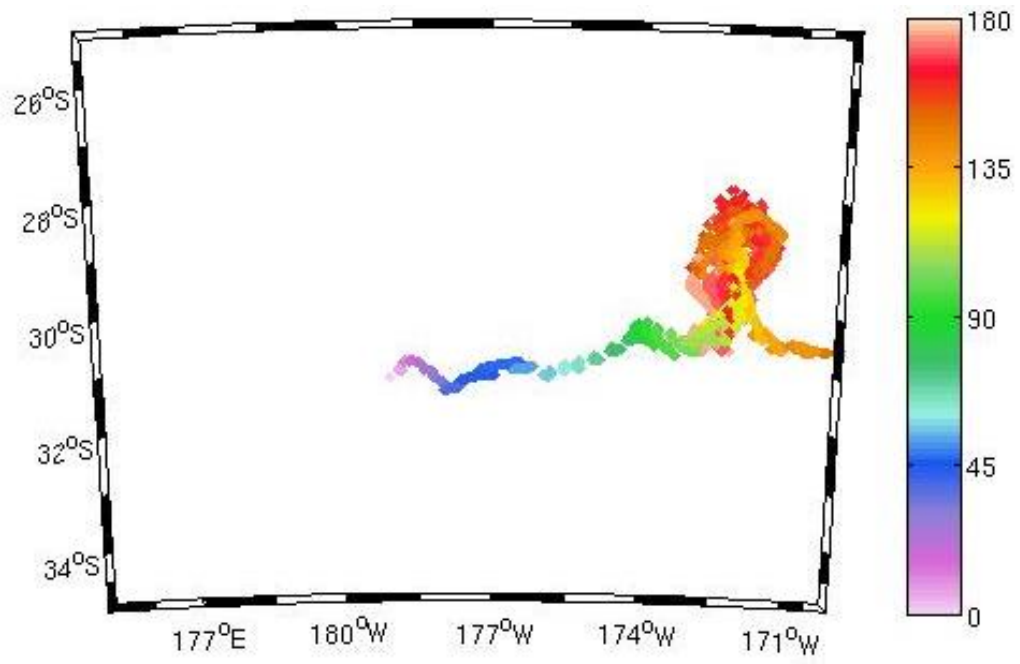
**Supplementary Fig. 3** 2400 particles starting at 18/7/1988, colour-coded by age (days)



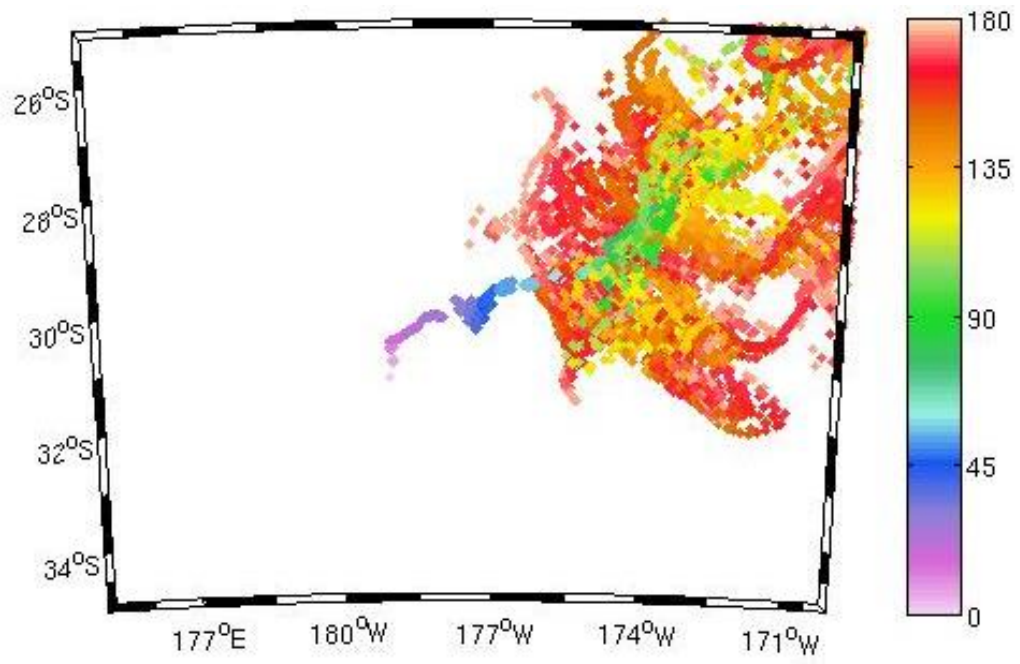
**Supplementary Fig. 4** 2400 particles starting at 18/7/1989, colour-coded by age (days)



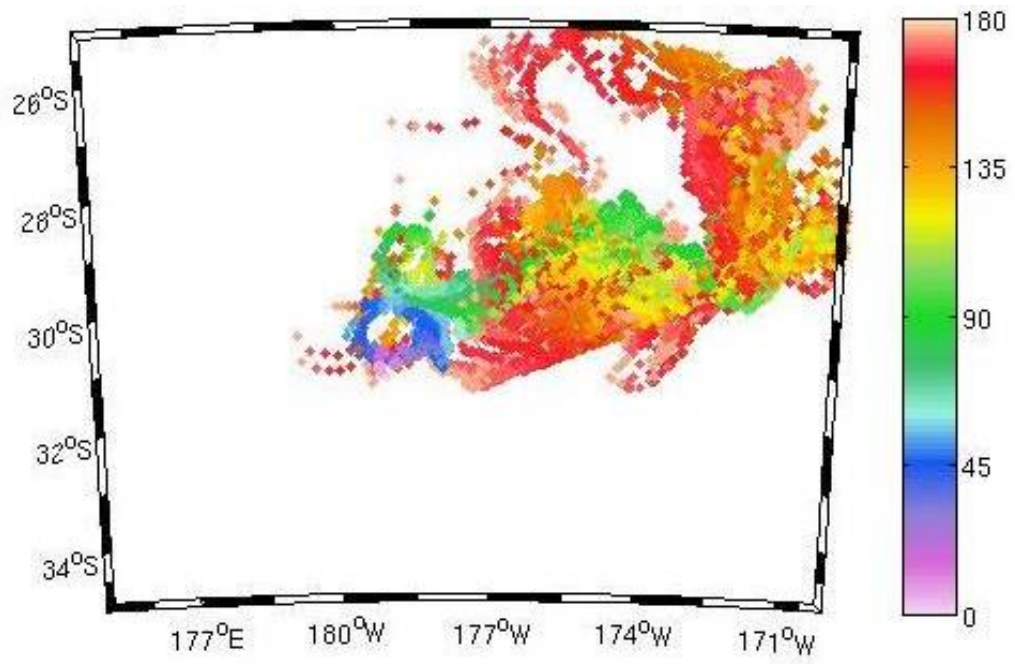
**Supplementary Fig. 5** 2400 particles starting at 18/7/1990, colour-coded by age (days)



**Supplementary Fig. 6** 2400 particles starting at 18/7/1991, colour-coded by age (days)

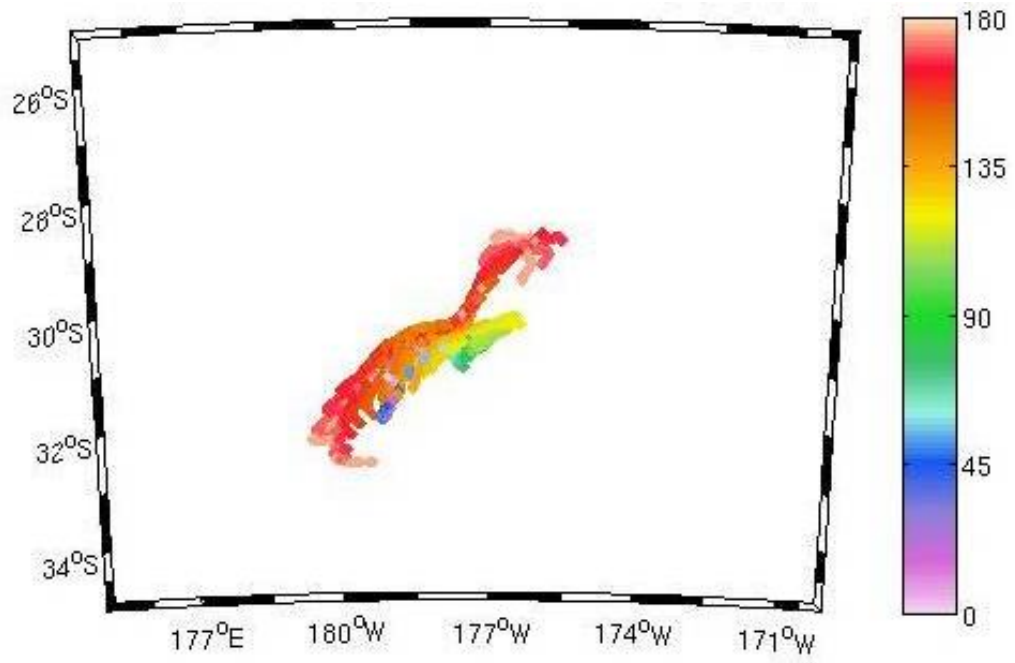


**Supplementary Fig. 7** 2400 particles starting at 18/7/1992, colour-coded by age (days)

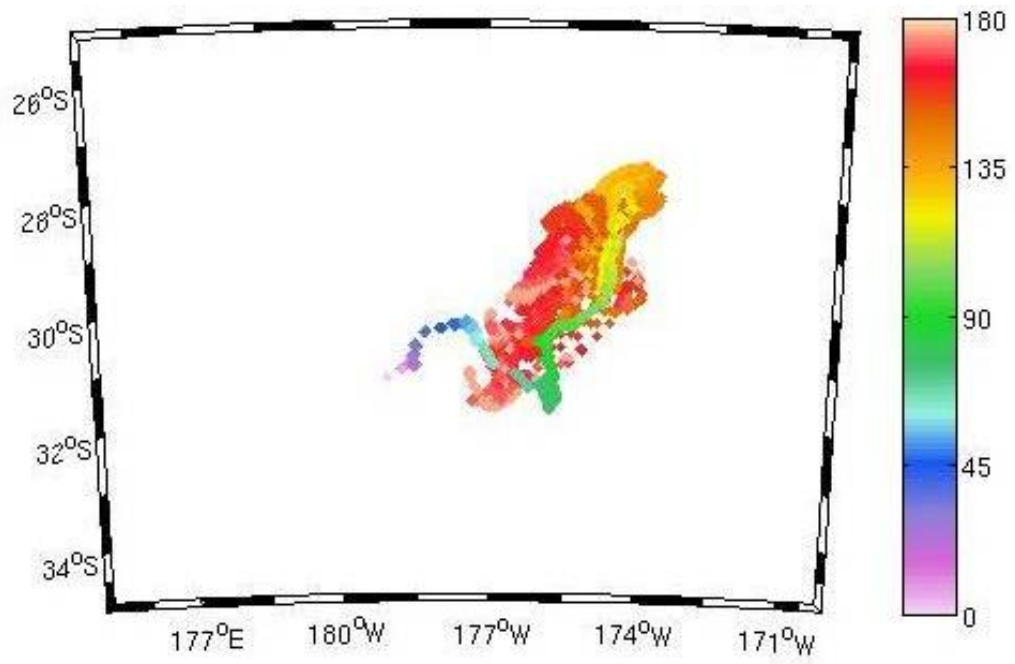


**Supplementary Fig. 8** 2400 particles starting at 18/7/1993, colour-coded by age (days)

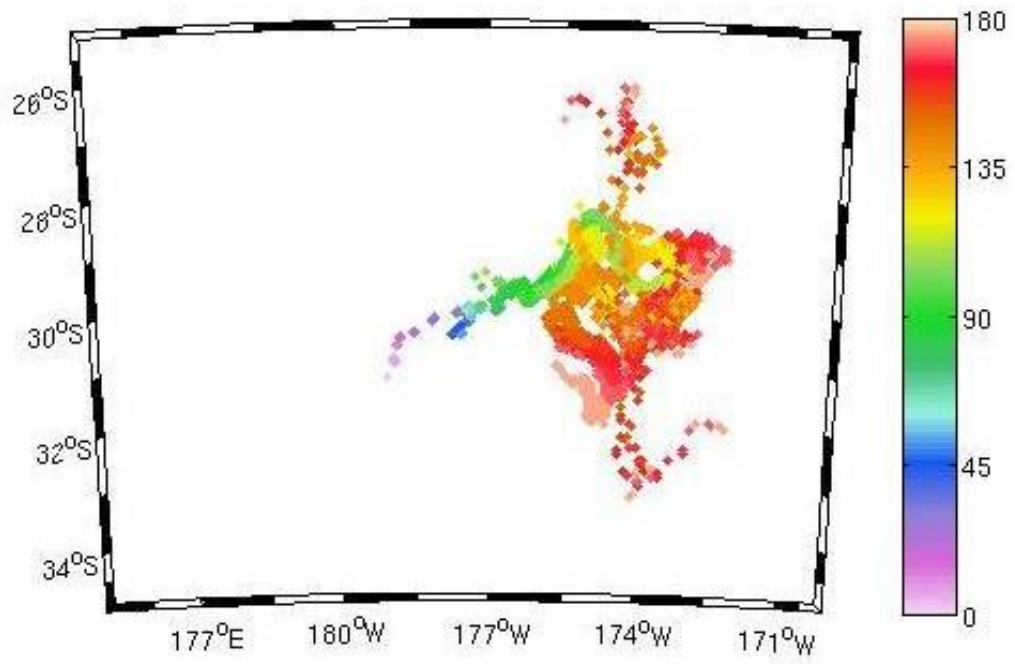




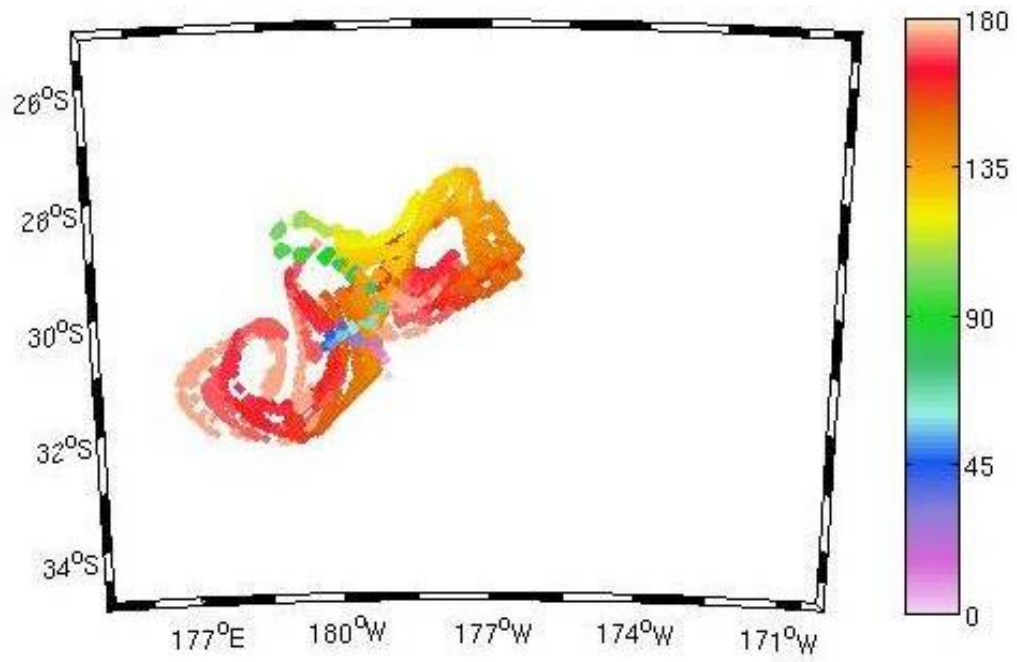
**Supplementary Fig. 9** 2400 particles starting at 18/7/1994, colour-coded by age (days)



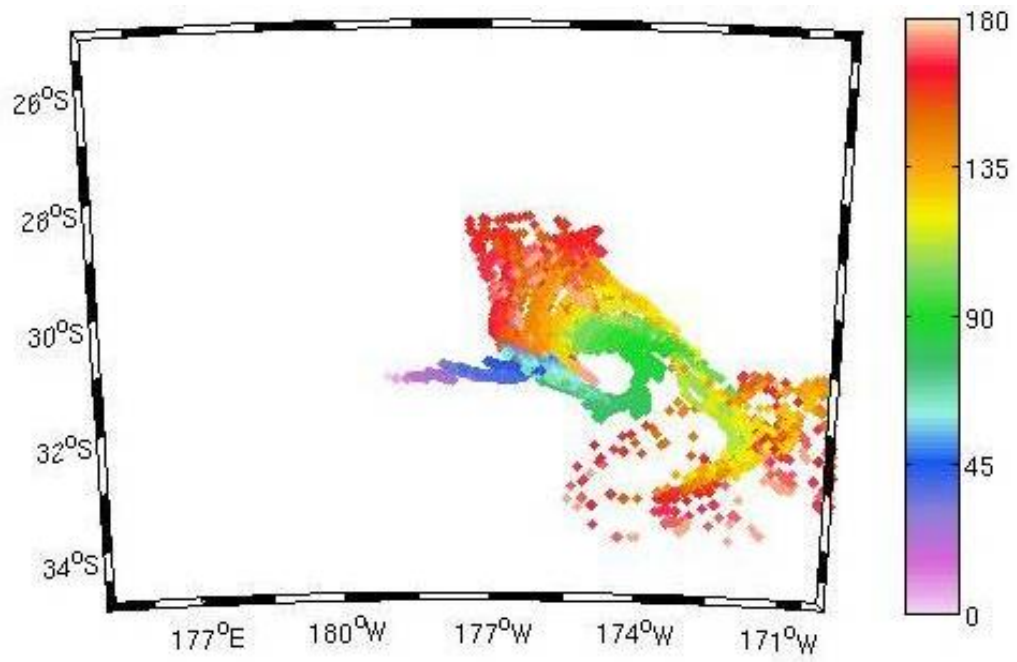
**Supplementary Fig. 10** 2400 particles starting at 18/7/1995, colour-coded by age (days)



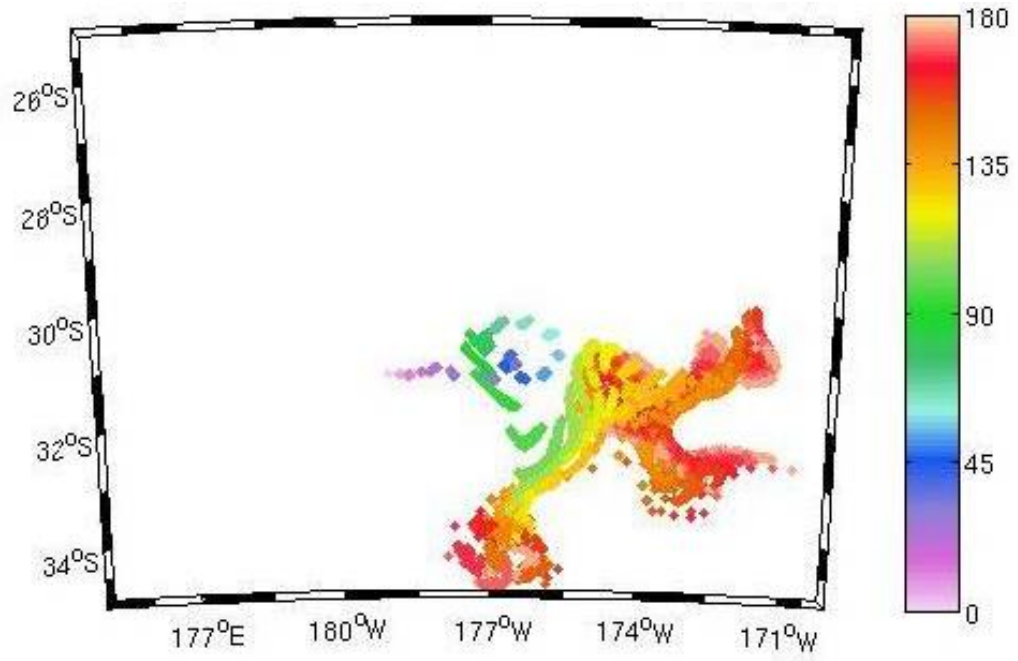
**Supplementary Fig. 11** 2400 particles starting at 18/7/1996, colour-coded by age (days)



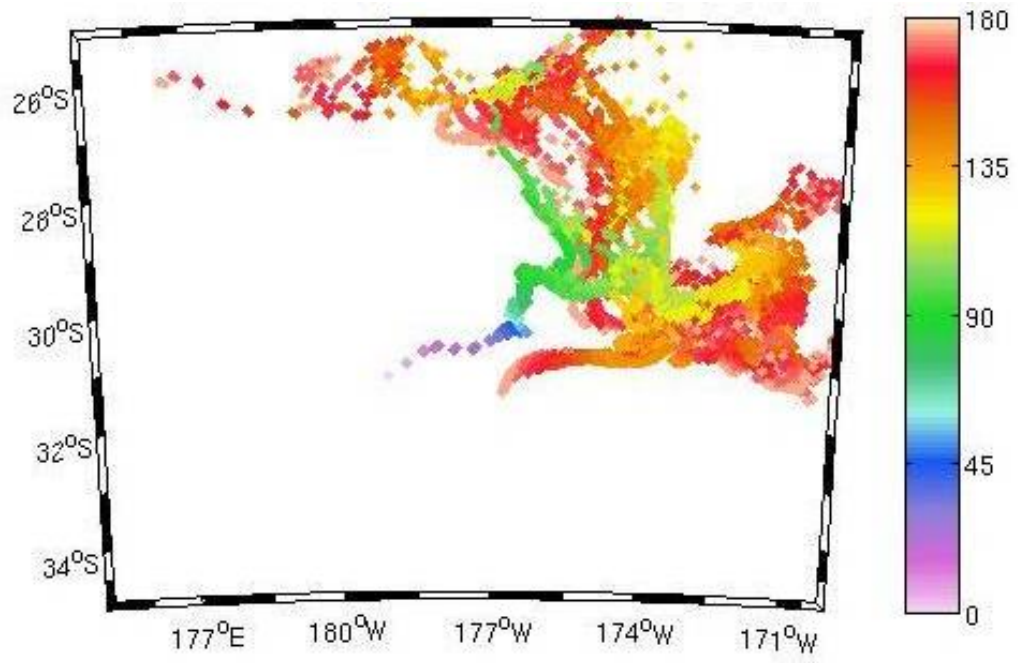
**Supplementary Fig. 12** 2400 particles starting at 18/7/1997, colour-coded by age (days)



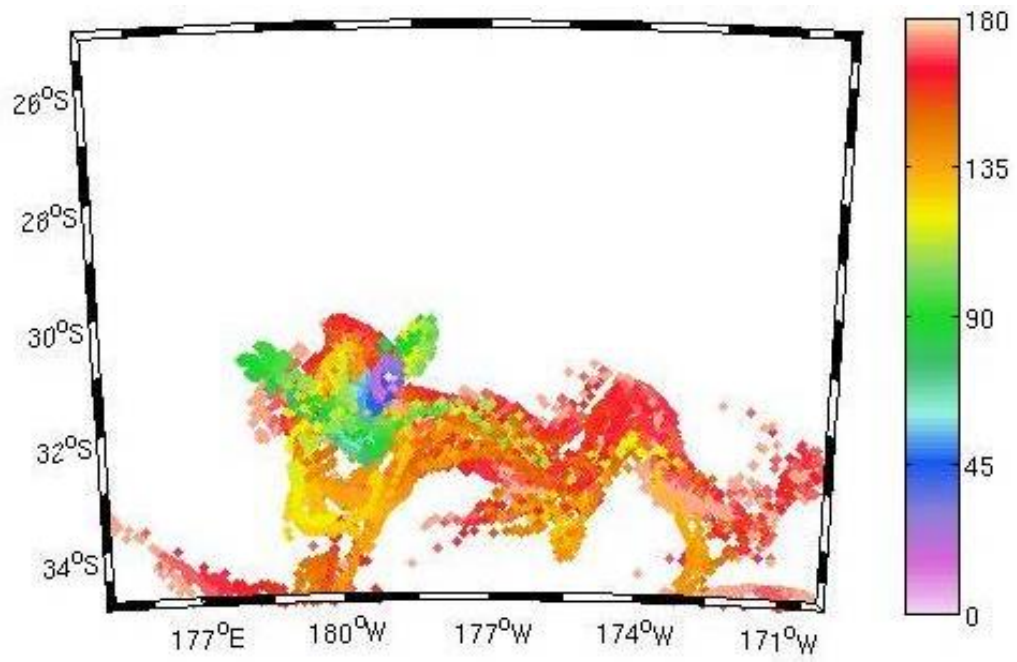
**Supplementary Fig. 13** 2400 particles starting at 18/7/1998, colour-coded by age (days)



**Supplementary Fig. 14** 2400 particles starting at 18/7/1999, colour-coded by age (days)

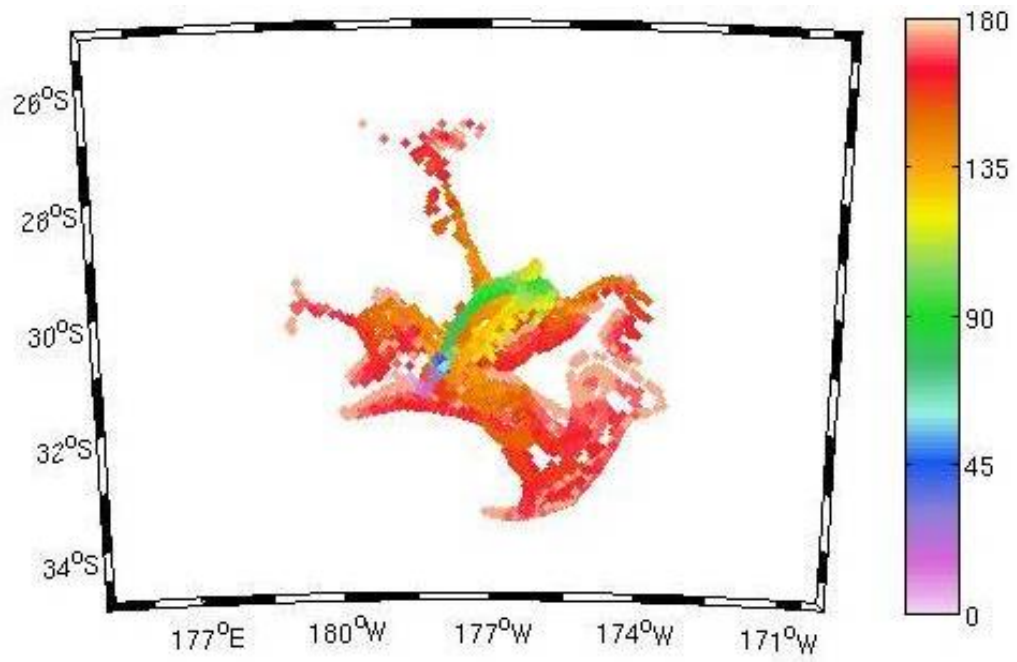


**Supplementary Fig. 15** 2400 particles starting at 18/7/2000, colour-coded by age (days)

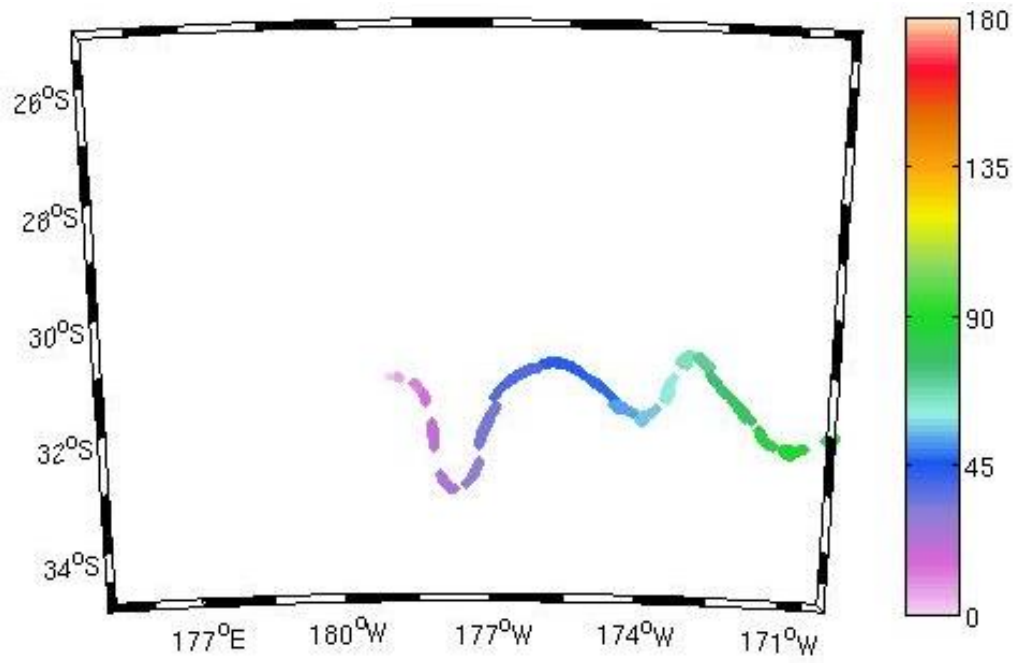


**Supplementary Fig. 16** 2400 particles starting at 18/7/2001, colour-coded by age (days)

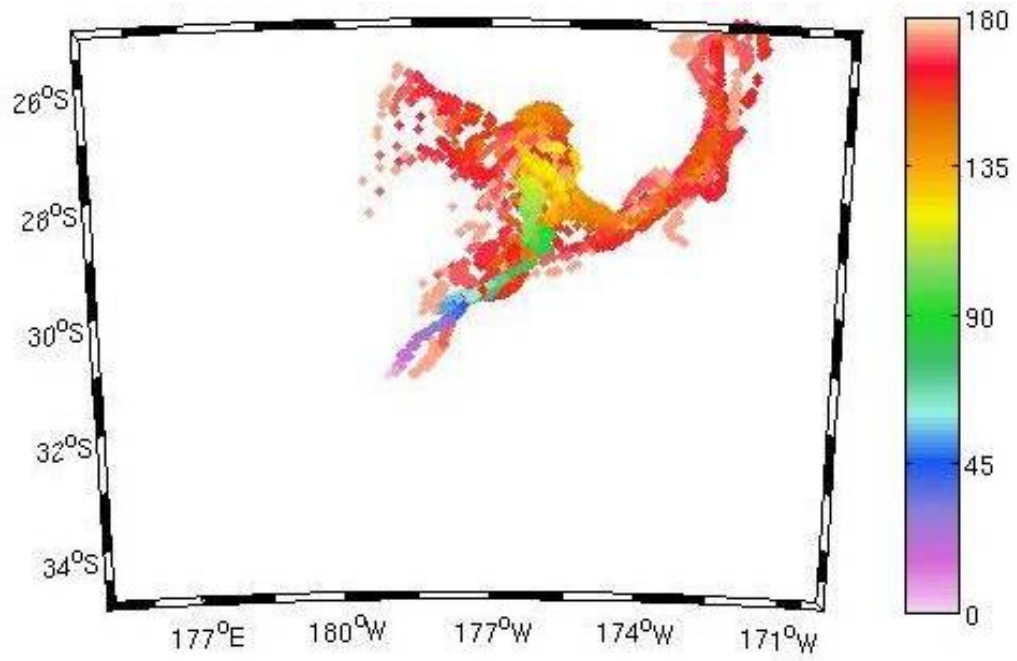




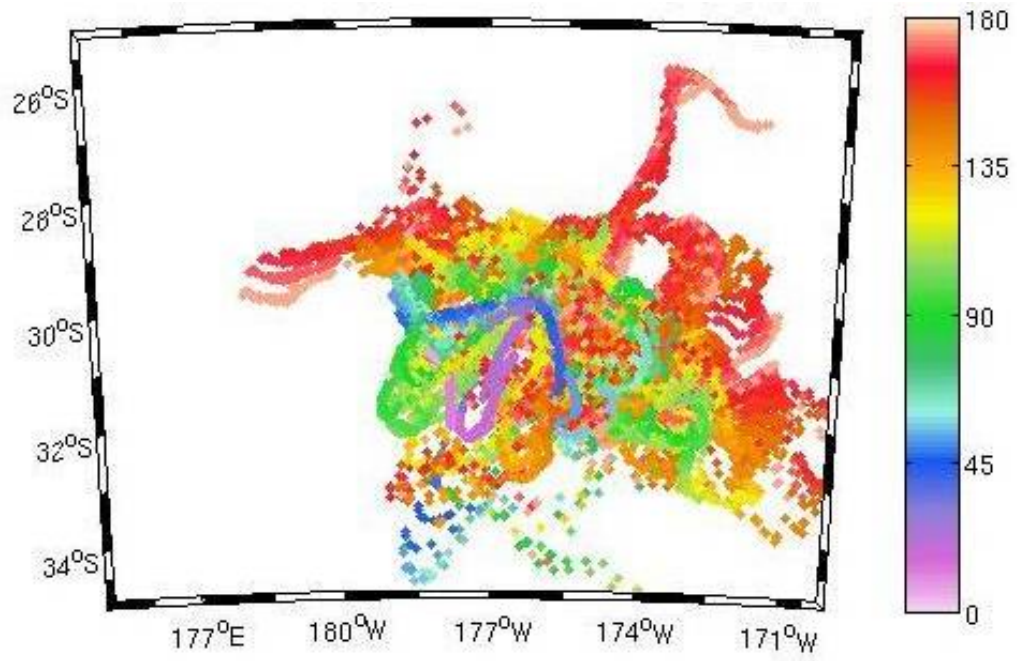
**Supplementary Fig. 17** 2400 particles starting at 18/7/2002, colour-coded by age (days)



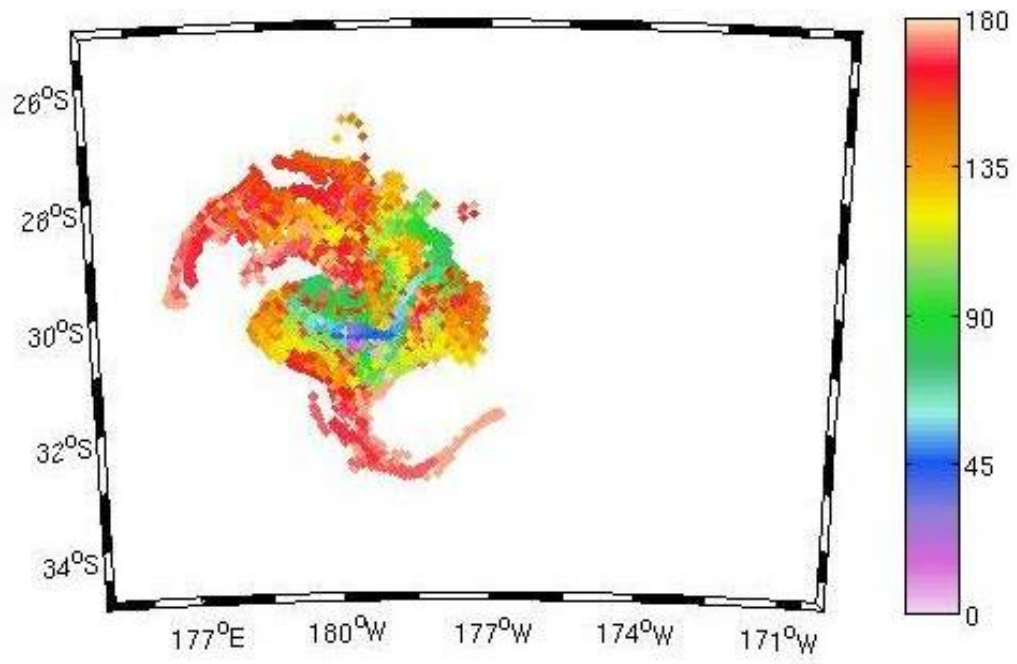
**Supplementary Fig. 18** 2400 particles starting at 18/7/2003, colour-coded by age (days)



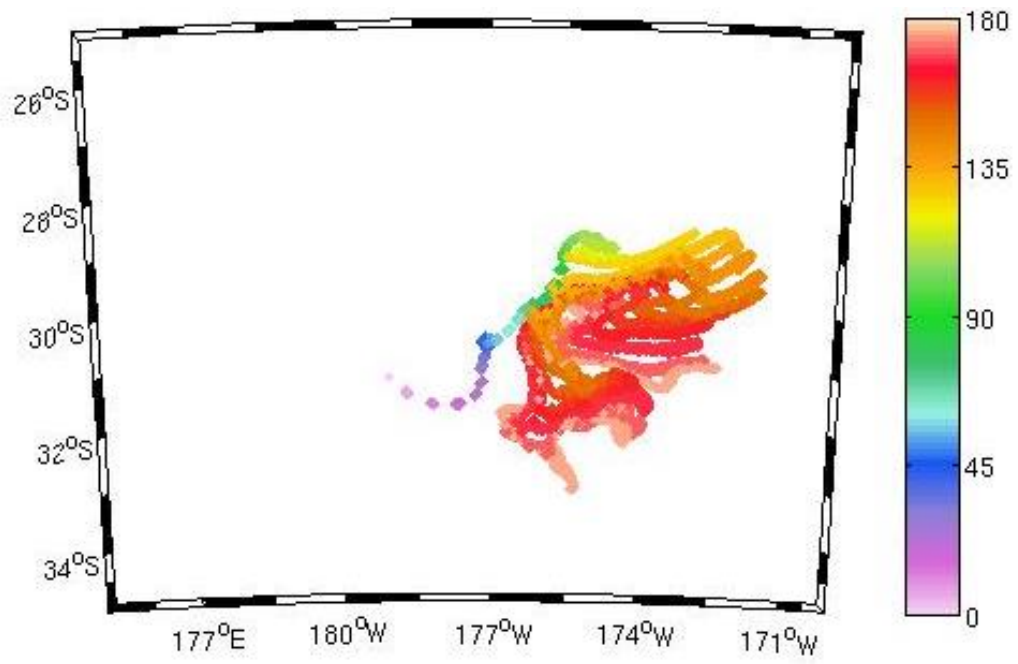
**Supplementary Fig. 19** 2400 particles starting at 18/7/2004, colour-coded by age (days)



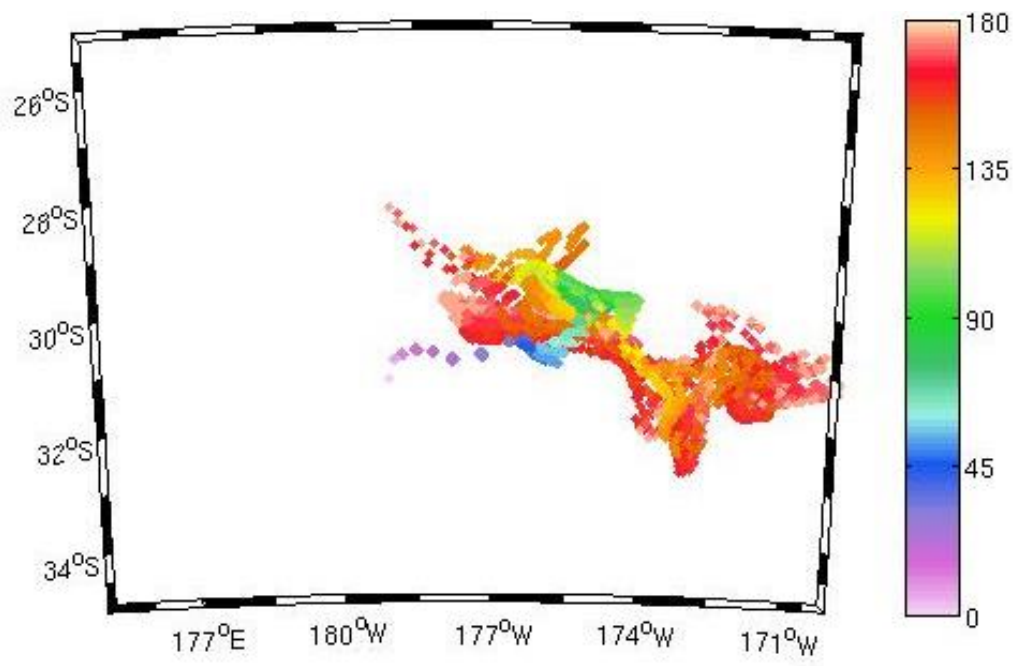
**Supplementary Fig. 20** 2400 particles starting at 18/7/2005, colour-coded by age (days)



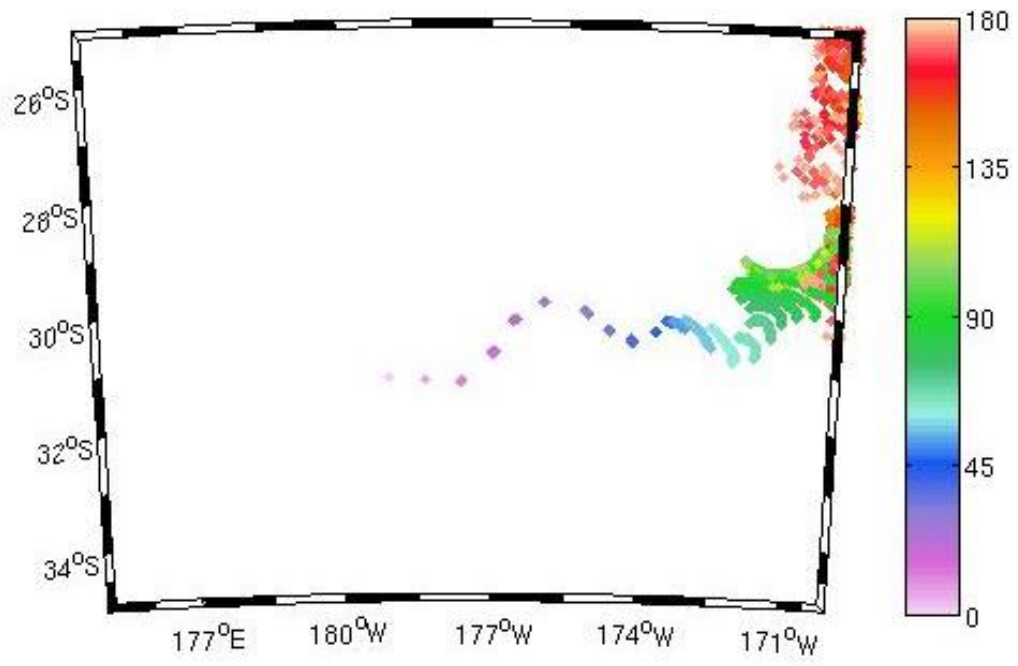
**Supplementary Fig. 21** 2400 particles starting at 18/7/2006, colour-coded by age (days)



**Supplementary Fig. 22** 2400 particles starting at 18/7/2007, colour-coded by age (days)

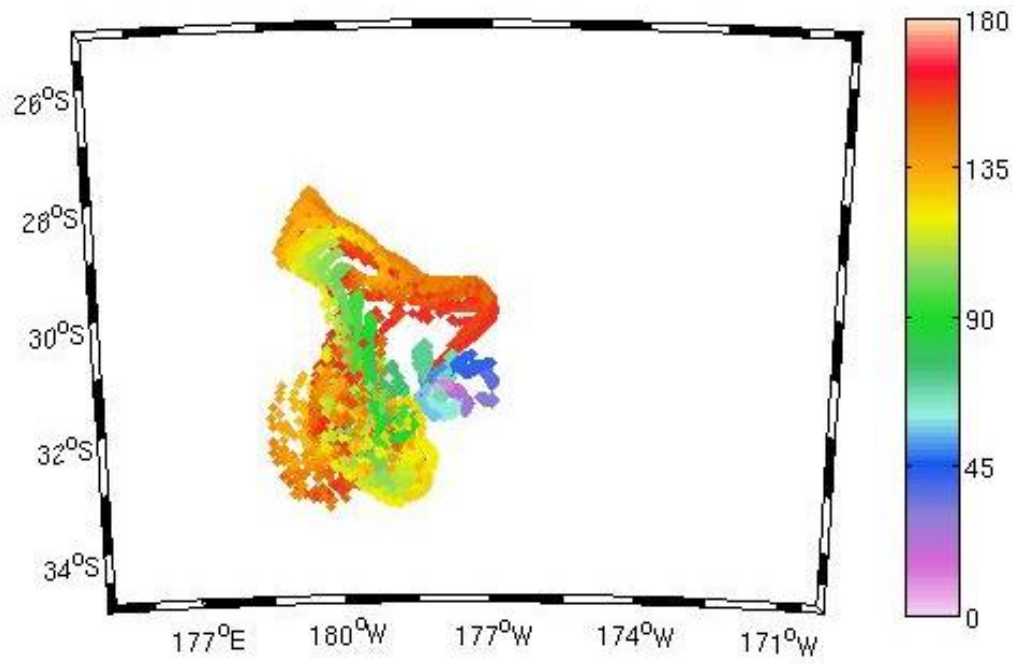


**Supplementary Fig. 23** 2400 particles starting at 18/7/2008, colour-coded by age (days)

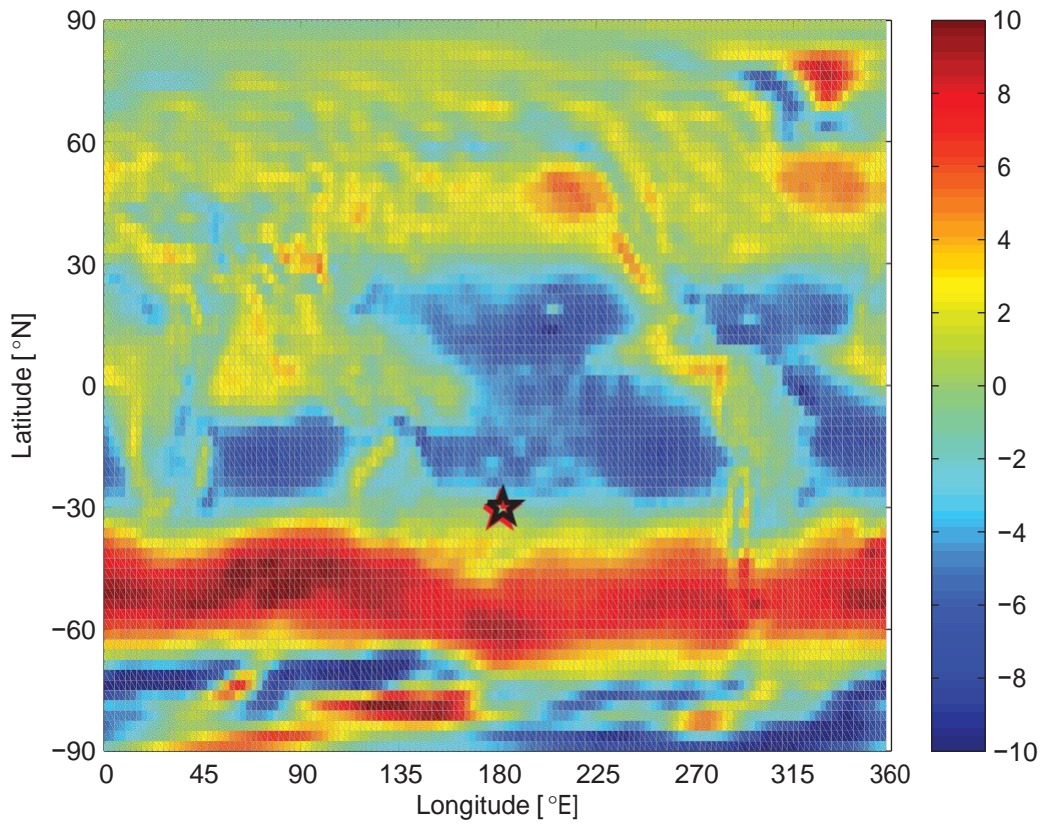


**Supplementary Fig. 24** 2400 particles starting at 18/7/2009, colour-coded by age (days)

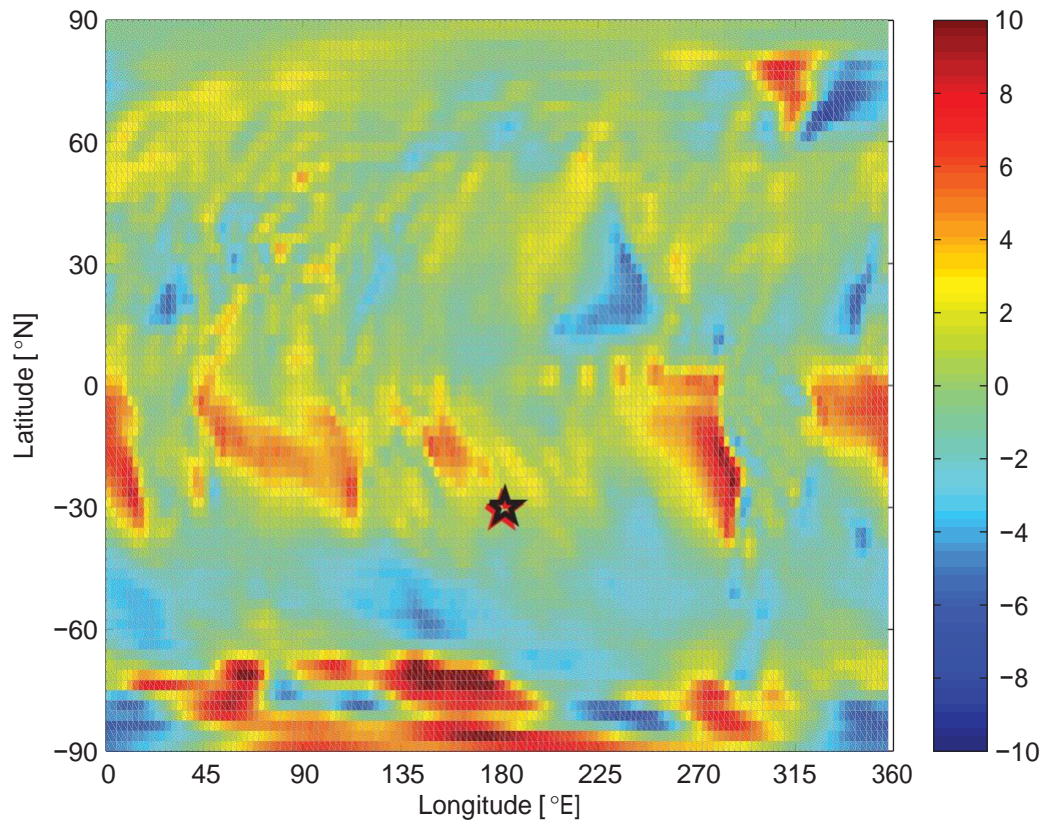




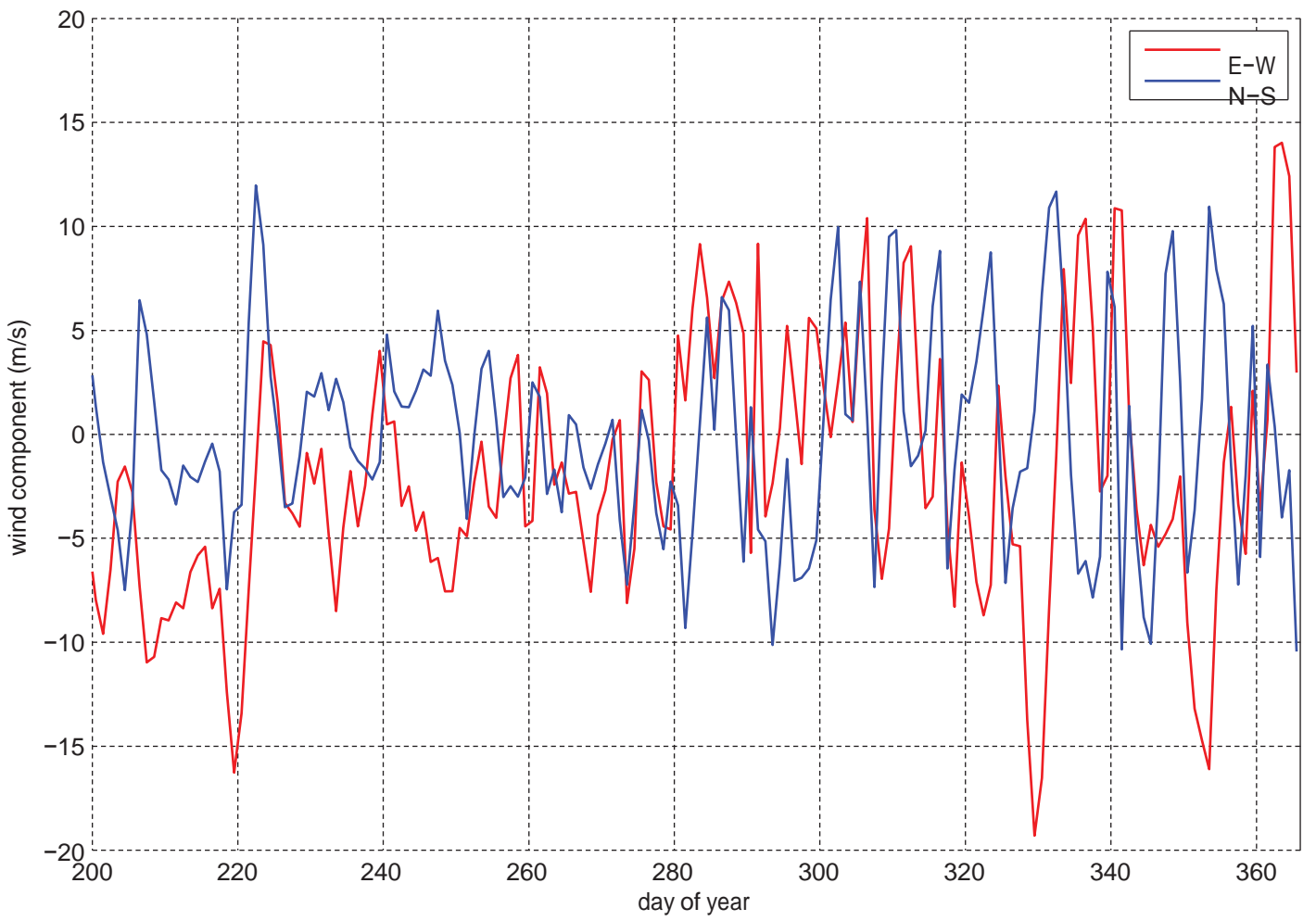
**Supplementary Fig. 25** 2400 particles starting at 18/7/2010, colour-coded by age (days)



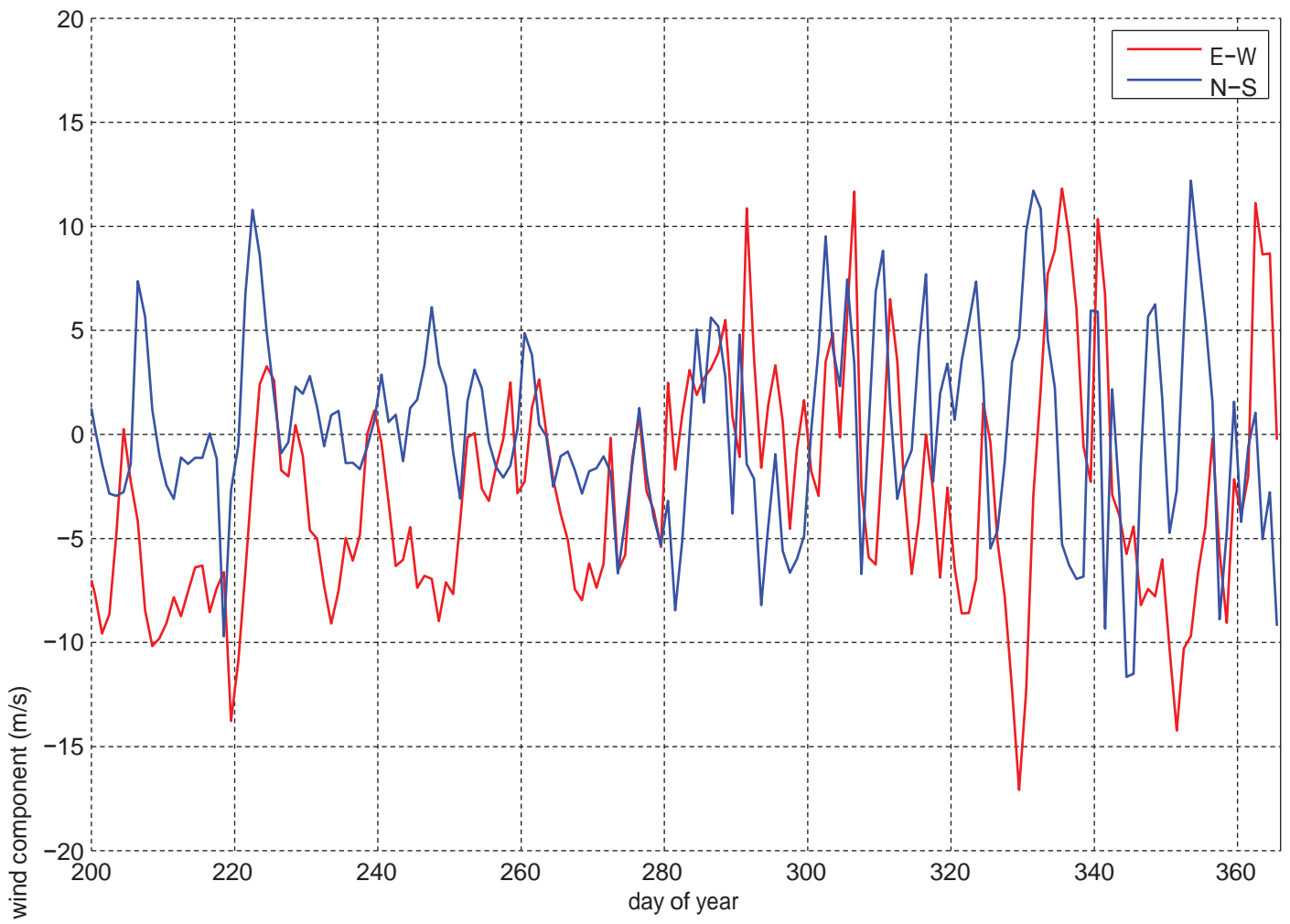
**Supplementary Fig. 26** NCEP/NCAR re-analysis project. E-W wind component (m/s) – 18/07/12–31/12/12 mean



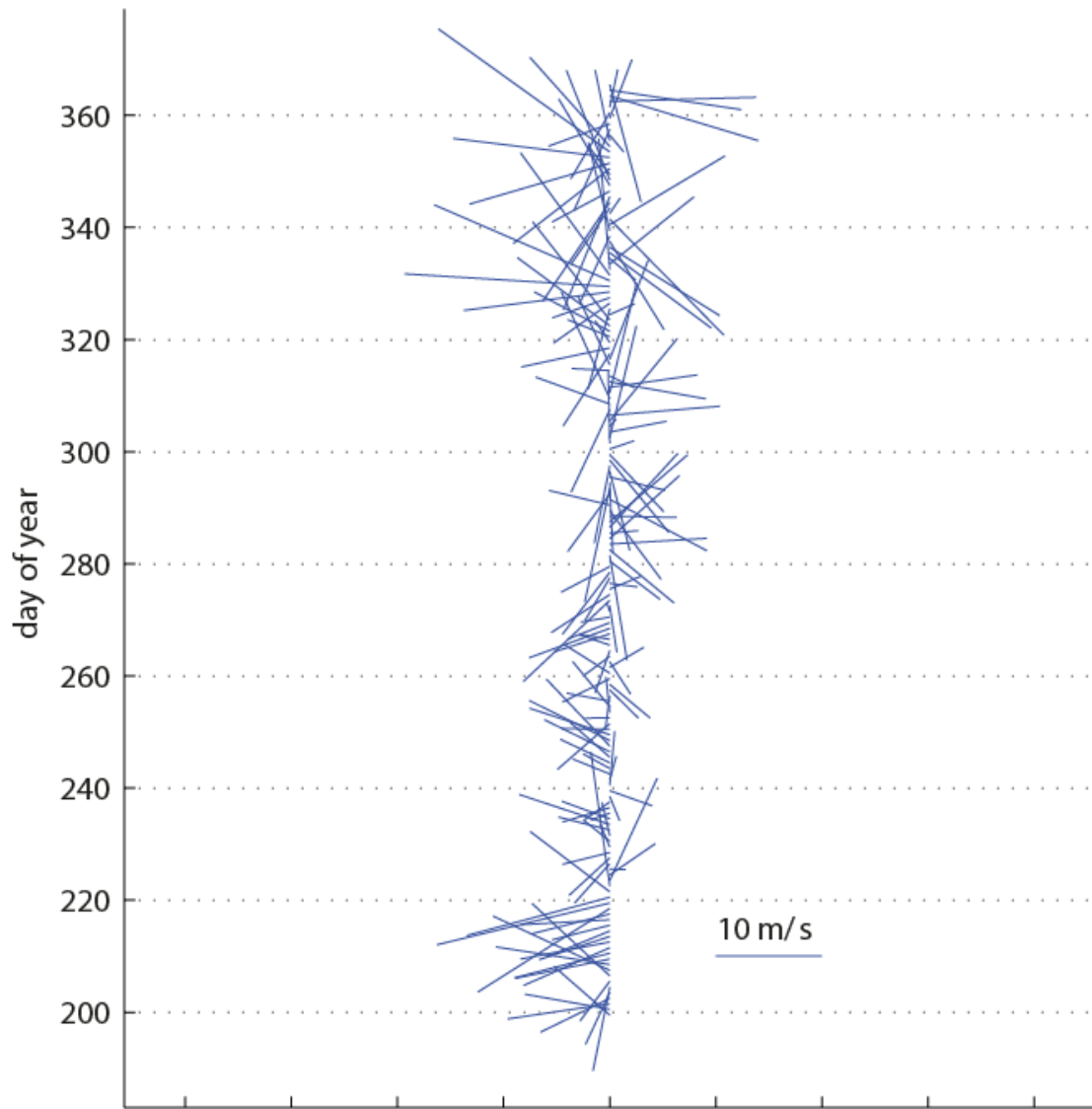
**Supplementary Fig. 27** NCEP/NCAR re-analysis project. N-S wind component (m/s) – 18/07/12–31/12/12 mean



**Supplementary Fig. 28** Daily-averaged wind components at 2.5 deg square centred 30S, 177.5W; 18/07/12–31/12/12



**Supplementary Fig. 29** Daily-averaged wind components at 2.5 deg square centred 27.5S, 177.5W;  
18/07/12–31/12/12



**Supplementary Fig. 30** Daily-averaged wind vector at 2.5 deg square centred 30S, 177.5W;  
18/07/12-31/12/12