S1:

Data on trends was collected, between September 2018 and May 2020, through an extensive search through the science databases (Science direct, web of Science, springer), to support the writing of chapter 12 (Marine Litter) of the United Nations World Ocean Assessment II. The search was further refined, looking for papers on trends and monitoring, to check for the changes in marine litter pollution in the last 5 years, after the publication of the WOA 1 in 2015. The search was then extended to all periods, using both databases and cited references, without consideration to «one shot assessment» papers or comparing short term time intervals (2-3 years, e.g. Gaibor et al., 2020). The methods used in each survey are sumarized in the two following tables S2 and S3, together with information on site, dates and protocols used.

S2 (A) : Marine litter trends in various locations and components of the marine environment (compilation of data from reports and scientific literature). Background colors are for the various region monitored.

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| **Location** | **Compartment/species** | **Period****(duration)** | **Methods** | **Trends** | **Observation** | **Reference** |
| North Atlantic/ Arctic Circle, Fram Strait | Deep sea floor, two stations at #2500m, 79–79°35’ North | 2002–2014 | Towed camera | Clear increase in litter densities and small-sized plastics abundance | Possible spreading from Europe to North and Arctic Basin | Tekman et al., 2017 |
| North-East Atlantic | 78 beaches | 2001–2011 | OSPAR/MSFD\* protocol | No large-scale trends | Hydrodynamics/climate-related drivers for local short -term changes | Schultz et al., 2013 |
| North Atlantic | Floating/ subsurface | 1957–2016 | Debris trapped in towed CPR,\*\* 16,725 tows | Increase since 1957, no trend since 2000, no change in Arctic waters | 6.5 million nautical miles  | Ostle et al., 2019 |
| North Sea, UK waters | Seabed, 17–150 stations/year | 1992–2017 | MSFD\* classification system | No detectable trend | Unit: presence of plastic | Maes et al., 2018 |
| Irish waters | Cetaceans (stranded and bycatches) | 1990–2015 | Stomach content | No trend for ingestion of litter and entanglement |  | Lusher et al., 2018 |
| Baltic Sea | 2377 hauls/53 cruises | 2012–2017 | MSFD/BITS | Last 2 years, increase in plastics; no trend for litter from fishing | Plastic - 35% of litter | Zablotski and Kraak, 2019 |
| North Atlantic Subtropical Gyre | Floating plastics (2,624 tows) | 1987–2012 | Surface Neuston nets, 335-µm mesh | No significant change in user plastics, highly significant decrease of industrial plastics | Extension of the work from Lavender Law et al. (2010) | Van Franeker and Lavender Law, 2015 |
| North-East Adriatic Sea | Seabed, 67 stations | 2011–2016 | Otter trawl | Decrease in total litter; no trend for plastic | 50% of plastic is from fishing/ aquaculture | Strafella et al., 2019 |
| France, Mediterranean Sea | Sea floor/shelves and canyons | 1994–2017 | Trawling, 1,902 hauls, MSFD\* classification system | No regular increase but higher levels in 1999-2001 and since 2012 | Plastic is up to 62% | Gerigny et al., 2019 |
| Spain/Mediterranean  | Seabed Shelves, 1323 hauls | 2007–2017 | Trawl, MSFD\* classification system | No temporal trend, decrease in Alboran Sea | Medits project | García-Rivera et al., 2018 |
| Western Mediterranean | Ingested debris/ sea turtles | 1995–2016 | MSFD classification system\* | Slight decrease | 195 samples | Domènech et al., 2019 |
| Balearic Islands | Floating | 2005–2015 | Onshore/offshore cleaning boats | No trend (all types of debris); increase in summer | From cleaning operations | Compa et al., 2019 |
| Taiwan | Beach litter, 541 clean ups events | 2004–2016 | Clean ups | No temporal trend | Data from ocean coastal cleanups | Walther et al., 2018 |
| China | National monitoring, beaches, surface and sea floor | 2011–2018 | State & Oceanographic Adminsitration (SOA) protocols | No trend |  | MEE/PRC, 2019 |
| China | 23 sites (beaches and adjacent waters; floating and seabed) | 2007–2014 | North West pacific action Plan (NOWPAP)/SOA protocols | No clear trend | Percentage of plastic increasing in seabed litter | Zhou et al., 2016 |
| Chile | Beaches (all coasts); 3 surveys, 69 beaches | 2006–2016 | Participative science, main categories | No trend | Three sampling years | Hidalgo-Ruz et al., 2018 |

\*MSFD: Marine Strategy Framework Directive; \*\*CPR: continuous plankton recorder.

S2 (B). microplastics trends in various locations and components of the marine environment (compilation of data from reports and scientific literature). Background colors are for the various region monitored.

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| **Location** | **Compartment/species** | **Period****(duration)** | **Methods** | **Trends** | **Observation** | **Reference** |
| East Greenland | Ingested microplastics (little auks, Alle alle) | 2005 and 2014 | Collected from live birds in nests, Visual counts and FTIR | No evident temporal trend |  | Amélineau et al., 2016 |
| East Greenland | Subsurface microplastics | 2005 and 2014 | WP-2 net, vertical tows -50m to surface, Visual counts and FTIR | Significant increase |  | Amélineau et al., 2016 |
| North Sea/ Netherlands | Birds (fulmars, 973 samples stranded), micro and meso plastics | 1979–2012 | OSPAR regular protocol (mass and number), visual sorting | Increase to mid-1990s; stable in the last decade; significant decrease of pellets |  | Van Franeker and Lavender Law, 2015 |
| Baltic Sea | 245 stations; floating/ingested microplastics -Atlantic herring and sprat (814 samples) | 1987–2015 | Plankton samples and trawling, stomach content, visual sorting, needle test, contamination avoided | No change in floating or ingested microplastics |  | Beer et al., 2018 |
| North Atlantic Subtropical Gyre | Floating microplastics | 1986–2008 | 6,136 surface Neuston nets, 335-µm mesh, hand-picked and enumerated | No trend | Samples from Sea Education Association, archived plankton samples | Lavender Law et al., 2010 |
| North Atlantic Subtropical Gyre | Floating microplastics | 1986 to 2015 | Data from SEA,hand-picked and enumerated | significant increasing temporal trend  | Relation found with cumulative global plastics production | Wilcox et al., 2017  |
| North East Atlantic | ingested microplastics by two deep-sea benthic invertebrates | 1976-2015 | Digestion of tissues, FTIR characterisation, Contamination addressed  | No trend | 95% fibers | Courtene Jones et al., 2019 |
| Southern Brazil | Birds (white-chinned petrels, 122 samples, stranded) | 1990–2014 | Stomach content, visual counts | Increase of fragments and pieces; decrease of virgin pellets |  | Petry and Benemann, 2017 |
| North Pacific Subtropical Gyre | Floating microplastics | 2001–2012 | 2,500 surface Neuston nets, 335-µm mesh, hand-picked and enumerated | No evident temporal trend, | Confounded spatial and temporal variability | Lavender Law et al., 2014 |
| California | Sediment microplastics | 1834–2009 (core sediments), datation | visual sorting/ FTIR | Industrial production related increase since 1945 | Correction for contamination (fibers) | Brandon et al. 2019 |
| Australia, Bay of sydney | Sediment microplastics | 1744 to 2004 (core sediments) | Visual sorting | Industrial production related increase since 1950 ( 3 points after 1950 only) | Corrected for contamination (fibers) | Willis et al., 2017 |