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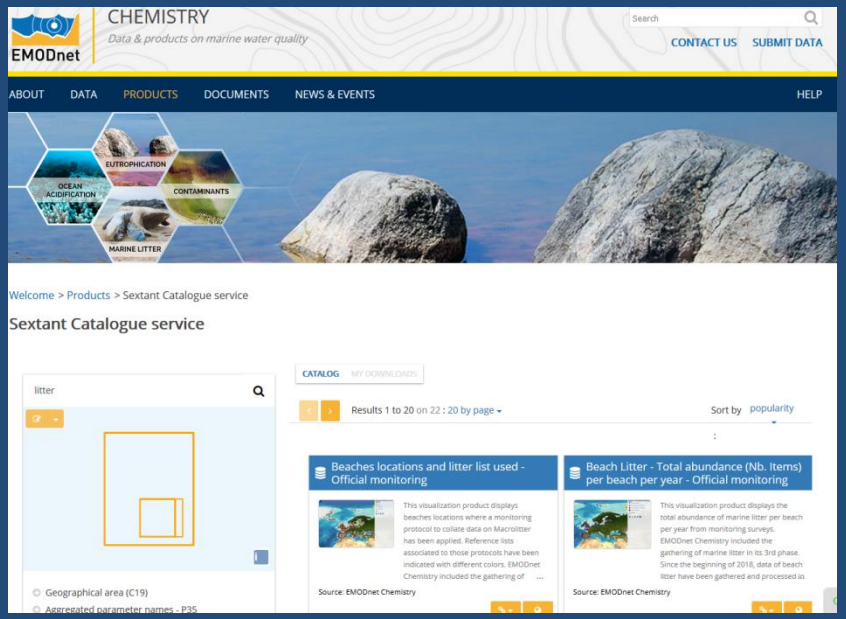
Produits de visualisation des données Déchets marins (D10 DCSMM) de la BDD EMODnet Chimie



M. Le Moigne	Ifremer
J. Daniel	Ifremer
F. Galgani	Ifremer
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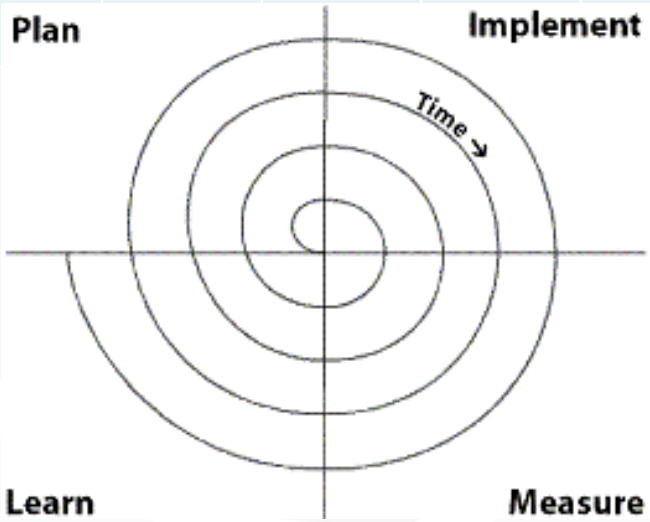
N. A.Giorgetti	OGS

Journée SEXTANT 18/06/2019

EMODnet, c'est quoi ?

MARITIME AFFAIRS

2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Phase 1 – limited sea basins (ca 6 MEuro)											
				Phase 2 - low resolution (ca 16 MEuro)							
						Phase 3 - multi-resolution (> 100 – 200 MEuro)					



Objectif : *Rendre les données marines souvent fragmentées et non visibles plus facilement accessibles.*

Initiative à long terme - Blue Growth Strategy (Marine Knowledge 2020)

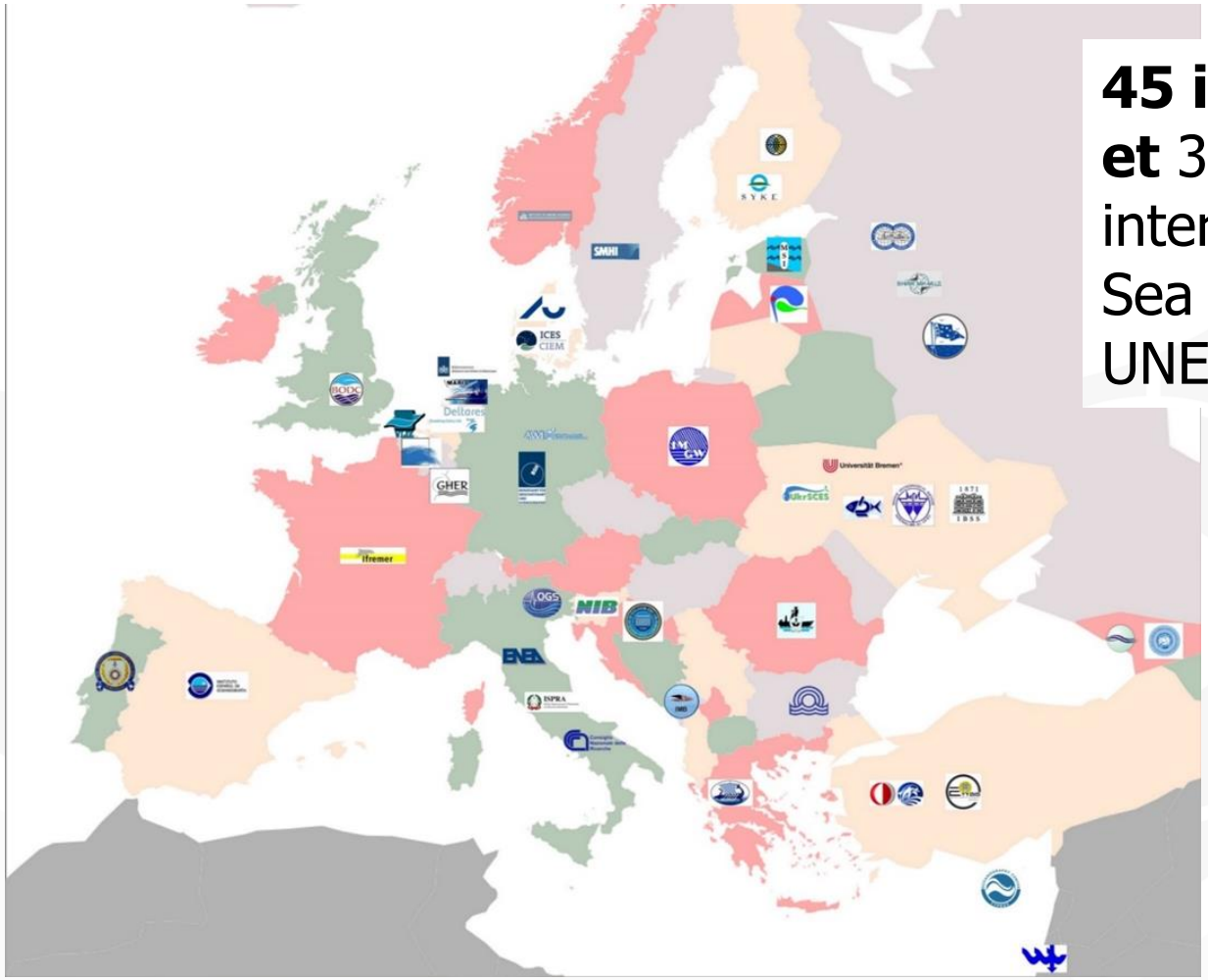
EMODnet, Comment ça marche ?

- **7 thématiques accessibles par des portails de données**
- Elles-mêmes accessibles depuis par un portail central commun

EMODnet Chimie phase 3 – en chiffres

- Projet sur 2 ans (**06/03/2017 – 05/03/2019**)
- Budget **2,805,000 €**
- **Partenariat**
  - Basé sur IODE/NODCs complété par les agences de surveillance
  - **Partenaires techniques** pour poursuivre le développement et l'exploitation de l'infrastructure (SISMER : Seadatanet / Sextant)
  - **Experts spécifiques pour coordonner l'analyse et la validation des données ainsi que la création de nouveaux produits**
- Nouvel AO en cours pour 2 ans

EMODnet Chimie 3 - partenaires



45 instituts de **27 pays et** 3 organisations internationales (ICES, Black Sea Commission, UNEP/MAP)

EMODnet Chimie 3 – objectifs généraux

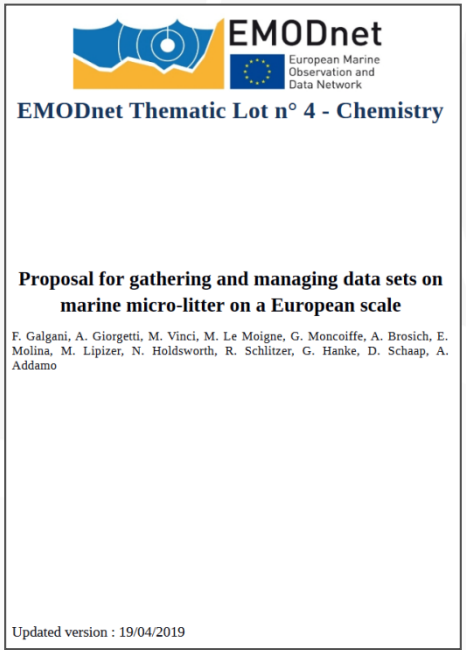
- **Collecter, aggréger, standardiser, vérifier la qualité** et **donner accès** aux données DCSMM suivantes :

D5 **Eutrophication**	Nutrients, chlorophyll, dissolved oxygen …	In water column	SISMER quadrige²
D8 **Contaminants**	Pollutants, heavy metals	In water column, sediments and biota	quadrige²
D9 **Contaminants in Seafood**	Pollutants, heavy metals	In biota	
D10 **Marine litter**	Abundance	In coastlines, In the sea-floor, micro-litter	DATALITTER

- **Générer des produits** à une échelle régionale basés sur les orientations de la stratégie commune de mise en oeuvre de la DCSMM

EMODnet Chimie 3 – Formats D10

- **Contribution à la mise en place de formats EMODnet** pour :
  - Microplastiques : format SDN
  - Déchets sur les plages : format xls basé sur BDD OSPAR Beach
  - Déchets sur les fonds (format csv) basé sur BDD ICES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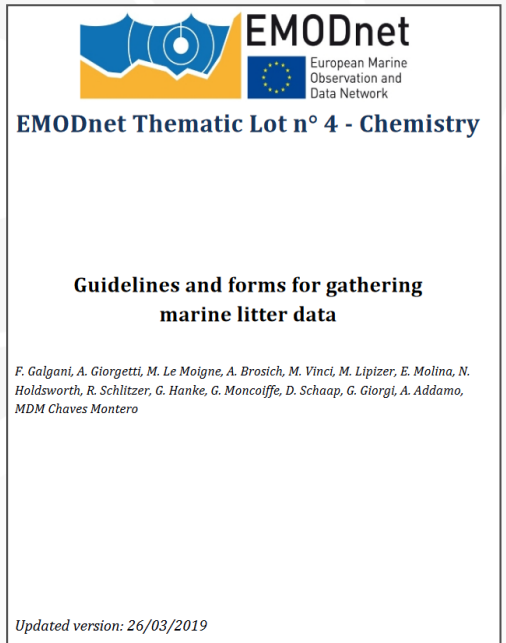
EMODnet Thematic Lot n° 4 - Chemistry

Proposal for gathering and managing data sets on marine micro-litter on a European scale

F. Galgani, A. Giorgetti, M. Vinci, M. Le Moigne, G. Moncoiffe, A. Brosich, E. Molina, M. Lipizer, N. Holdsworth, R. Schlitzer, G. Hanke, D. Schaap, A. Addamo

Updated version : 19/04/2019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EMODnet Thematic Lot n° 4 - Chemistry

Guidelines and forms for gathering marine litter data

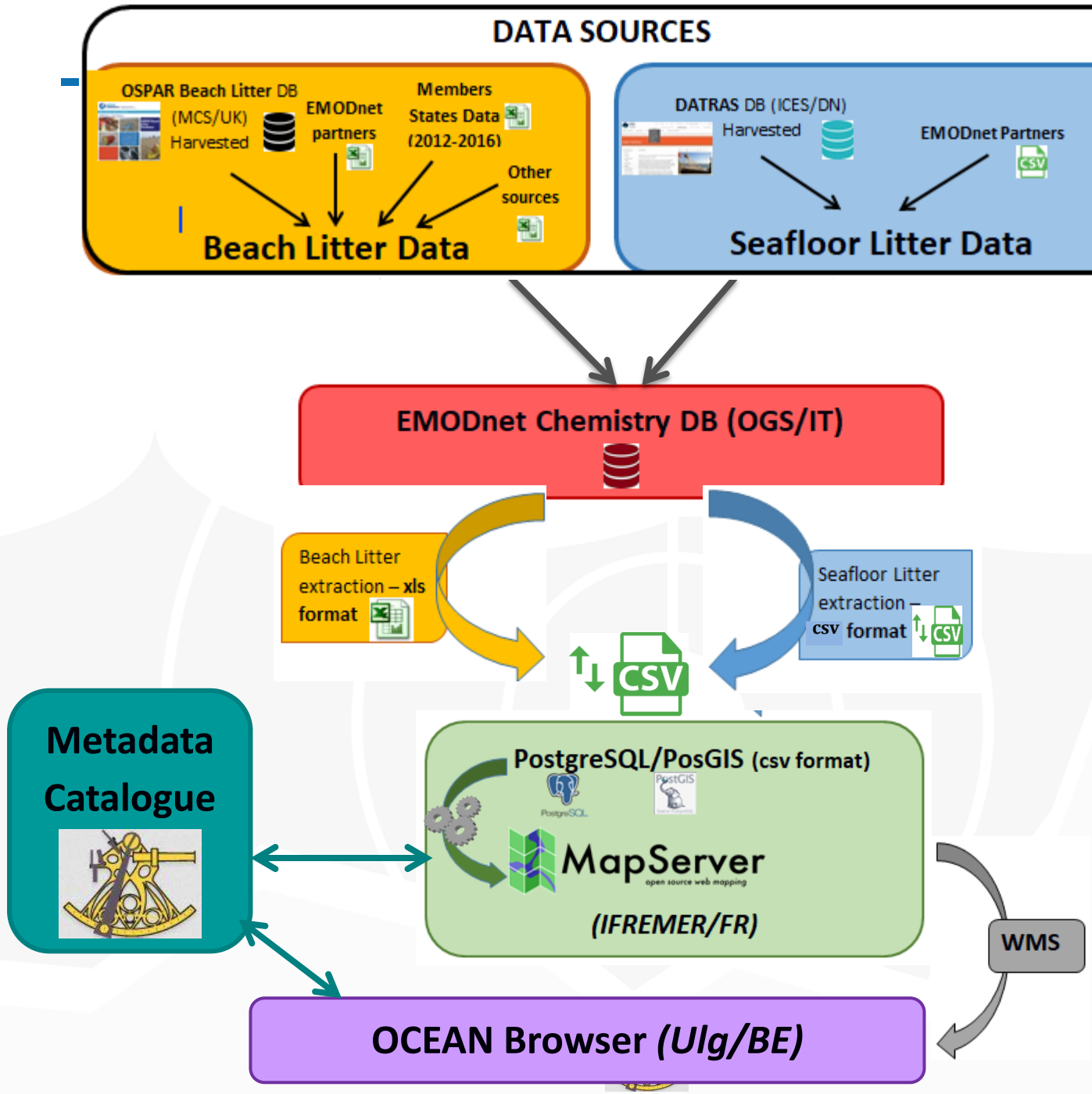
F. Galgani, A. Giorgetti, M. Le Moigne, A. Brosich, M. Vinci, M. Lipizer, E. Molina, N. Holdsworth, R. Schlitzer, G. Hanke, G. Moncoiffe, D. Schaap, G. Giorgi, A. Addamo, MDM Chaves Montero

Updated version: 26/03/2019

EMODnet Chimie 3 – Produits visualisation D10

- Création de 20 cartes de visualisation des données Déchets Marins collectées pour :
  - Déchets plages
  - Déchets fond

- **Total abundance**
- **Material categories percentage**
- **Top 5 items percentage**
- **Smoking related items abundance (only Beach Litter)**
- **Fishing related items abundance**
- **Plastic bag related item abundance**


DATA SOURCES
OSPAR Beach Litter DB
(MCS/UK)
Harvested
EMODnet partners
Members States Data (2012-2016)
Other sources
Beach Litter Data
DATRAS DB (ICES/DN)
Harvested
EMODnet Partners
Seafloor Litter Data
EMODnet Chemistry DB (OGS/IT)
Beach Litter extraction – xls format
Seafloor Litter extraction – csv format
CSV
Metadata Catalogue
PostgreSQL/PosGIS (csv format)
MapServer
(IFREMER/FR)
WMS
OCEAN Browser (Ulg/BE)

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Produits Déchets plages

Journée SEXTANT 18/06/2019

Cartes Déchets Plages [2001-2018]

Six protocoles de **surveillance** différents :

- OSPAR 100
- OSPAR 1000
- TSG ML
- UNEP
- UNEP MARLIN
- ITALIAN

➢ Six listes différentes d'items
➢ Nbre de relevés annuels différents
➢ Longueurs de plage différentes

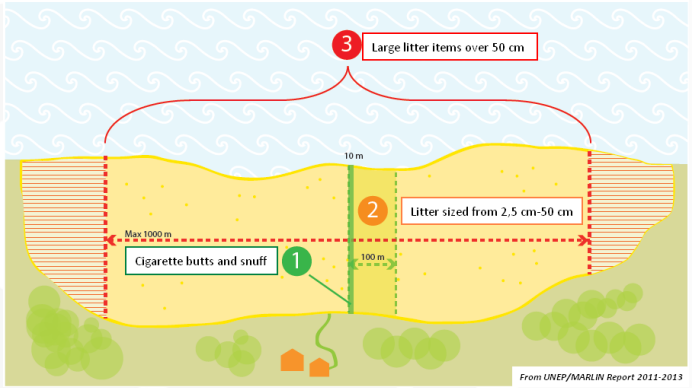
Opérations de nettoyage traitées séparément

➢ **Processus d'harmonisation des listes en cours** au sein du TG-ML

Cartes Déchets Plages [2001-2018]

N'ont pas été inclus dans les cartes :

- Plages sans coordonnées
- Données du protocole OSPAR 1000
- Les Items : Cigarette butts, paraffin and wax, and items **< 2.5 cm**
- Les categories : Faeces, Food waste and Organic
- Les duplications UNEP_MARLIN



Normalisations effectuées :

- Longueurs de plage à 100 m
- 1 relevé / plage / année

Cartes Déchets Plages [2001-2018]

Total abundance per beach per year

Calcul :

$$Totalabundance = \frac{\sum itemsquantities(beachlengthnormalizedat100m)}{Numberofsurveysontheyear}$$

Représentation en utilisant 4 classes :

- 0 – Percentil 50
- Percentil 50 – Percentil 75
- Percentil 75 – Percentil 95
- > Percentil 95

Cartes Déchets Plages [2001-2018]

Material categories percentage per beach per year

- **11 Categories obtenues par l'harmonisation des 5 listes**

	Material categories shown on the maps	OSPAR Material categories	ITA Material categories	TSG_ML Material categories	UNEP Material categories	UNEP_MARLIN Material categories
1	Artificial polymer materials	Plastic/ Polystyrene	Plastic and Polystyrene	Artificial polymer materials	Plastic	Plastic
					Foamed Plastic	Foamed Plastic
2	Cloth/Textile	Cloth	Fabrics	Cloth/Textile	Cloth	Cloth
3	Glass/Ceramics	Glass	Ceramic glass	Glass/Ceramics	Glass & ceramic	Glass & ceramic
		Pottery/Ceramics				
4	Medical litter	Medical waste	Medical litter			
5	Metal	Metal	Metal	Metal	Metal	Metal
6	Other				Other	Other
				Undefined		
				Unidentified		
7	Paper/Cardboard	Paper/Cardboard	Cardboard paper	Paper/Cardboard	Paper cardboard	Paper cardboard
8	Pollutants	Pollutants		Chemicals		
9	Processed/Worked wood	Wood	Wood	Processed/Worked wood	Wood	Wood
10	Rubber	Rubber	Rubber	Rubber	Rubber	Rubber
11	Sanitary litter	Sanitary waste	Sanitary litter			

Cartes Déchets Plages [2001-2018]

Material categories percentage per beach per year

Calcul :

$$Material\% = \frac{\sum itemquantities(normalizedat100m)of\,eachmaterialcategory}{\sum itemquantities(normalizedat100m)of\,allcategories} * 100$$

Cartes Déchets Plages [2001-2018]

Top 5 items percentage per beach per year

Selection :

1. Top 5 items calculé pour chaque liste et couverture temporelle disponible

Rank	OSPAR Material categories	OSPAR Item code	OSPAR Item name	ITA Material categories	ITA Item code	ITA Item name	TSG_ML Material categories	TSG_ML Item code	TSG_ML Item name	UNEP Material categories	UNEP Item code	UNEP Item name	UNEP_MARLIN Material categories	UNEP_MARLIN Item code	UNEP_MARLIN Item name
1	Plastic/ Polystyrene	46	Plastic/polystyrene pieces 2,5 cm > < 50 cm	Plastic and Polystyrene	IT7	Straws and stirrers(bars)/plastic cutlery/plates/plastic cups and crisp lids/bags, plastic sweets/rings of bottle caps/caps and lids/food containers(eg hamburgers)/beverage bottles and containers/packaging for cans of 4/6 rings/lolly sticks	Artificial polymer materials	G79	Plastic pieces 2.5 cm > < 50cm	Plastic	PL24	Other (specify)	Plastic	PL24	Other (specify)
2	Plastic/ Polystyrene	32	String and cord (diameter less than 1 cm)	Plastic and Polystyrene	IT19	Other plastic objects	Artificial polymer materials	G95	Cotton bud sticks	Plastic	PL02	Bottles < 2 L	Plastic	PL07	Plastic bags (opaque & clear)
3	Sanitary waste	98	Cotton bud sticks	Plastic and Polystyrene	IT16	Plastic containers for lures / fishing lines and fishing line in nylon (fishing) / plastic boxes and boxes for fish / nets and network pieces / ropes and tops	Artificial polymer materials	G21	Plastic caps/lids drinks	Metal	ME02	Bottle caps, lids & pull tabs	Paper cardboard	PC03	Cups, food trays, food wrappers, cigarette packs, drink containers
4	Plastic/Polystyrene	15	Caps/lids	Plastic and Polystyrene	IT18	Other polystyrene objects	Artificial polymer materials	G76	Plastic/polystyrene pieces 2.5 cm > < 50cm	Plastic	PL01	Bottle caps & lids	Plastic	PL19	Rope
5	Plastic/Polystyrene	202	Old plastic pieces	Sanitary litter	IT53	Cotton bud sticks	Artificial polymer materials	G45	Mussels nets, Oyster nets	Plastic	PL04	Knives, forks, spoons, straws, stirrers, (cutlery)	Plastic	PL01	Bottle caps & lids

Cartes Déchets Plages [2001-2018]

Top 5 items percentage per beach per year

Selection :

1. Top 5 items calculé pour chaque liste et couverture temporelle disponible
2. 16 items obtenus après harmonisation + un item “autre”

	Material categories	Item code	Item name	Maps item name
1	Plastic/Polystyrene Artificial polymer materials	OSPAR 46 TG_ML G76 TG_ML G79	Plastic/polystyrene pieces 2,5 cm > < 50 cm Plastic/polystyrene pieces 2.5 cm > < 50cm Plastic pieces 2.5 cm > < 50cm	**Plastic/polystyrene pieces 2,5 cm > < 50 cm (OSPAR - TSG_ML)**
2	Plastic/Polystyrene	OSPAR 32	String and cord (diameter less than 1 cm)	**String and cord (diameter less than 1 cm) (OSPAR)**
3	Sanitary waste Artificial Polymer materials	OSPAR 98 IT53 TG-ML G95	Cotton bud sticks	**Cotton bud sticks (ITA - OSPAR - TSG_ML)**
4	Plastic/Polystyrene Artificial polymer materials Plastic Plastic	OSPAR 15 TG_ML G21 UNEP PL01 UNEP_MARLIN PL01	Caps/lids Plastic caps/lids drinks Bottle caps & lids Bottle caps & lids	**Caps/lids (OSPAR - TSG_ML - UNEP - UNEP_MARLIN)**
5	Plastic/Polystyrene	202	Old plastic pieces	**Old plastic pieces (OSPAR)**
6	Plastic and Polystyrene	IT7	Straws and stirrers(bars)/plastic cutlery/plates/plastic cups and crisp lids/bags, plastic sweets/rings of bottle caps/caps and lids/food containers(eg hamburgers)/beverage bottles and containers/packaging for cans of 4/6 rings/lolly sticks	**Straws and stirrers(bars)/plastic cutlery/plates/plastic cups and crisp lids/bags, plastic sweets/rings of bottle caps/caps and lids/food containers(eg hamburgers)/beverage bottles and containers/packaging for cans of 4/6**
7	Plastic and Polystyrene Plastic and Polystyrene Plastic Plastic	IT19 IT 18 UNEP PL24 UNEP MARLIN PL24	Other plastic objects Other polystyren objects Other (specify) Other (specify)	**Other plastic or polystyren object (ITA - UNEP - UNEP_MARLIN)**
8	Plastic and Polystyrene	IT16	Plastic containers for lures / fishing lines and fishing line in nylon (fishing) / plastic boxes and boxes for fish / nets and network pieces / ropes and tops	**Plastic containers for lures / fishing lines and fishing line in nylon (fishing) / plastic boxes and boxes for fish / nets and network pieces / ropes and tops (ITA)**
9	Artificial polymer materials	G45	Mussels nets, Oyster nets	**Mussels nets, Oyster nets (TSG_ML)**
10	Plastic	PL02	Bottles < 2 L	**Bottles < 2 L (UNEP)**
11	Metal	ME02	Bottle caps, lids & pull tabs	**Bottle caps, lids & pull tabs (UNEP)**
12	Plastic	PL04	Knives, forks, spoons, straws, stirrers, (cutlery)	**Knives, forks, spoons, straws, stirrers, (cutlery) (UNEP)**
14	Plastic	PL07	Plastic bags (opaque & clear)	**Plastic bags (opaque & clear) (UNEP_MARLIN)**
15	Paper cardboard	PC03	Cups, food trays, food wrappers, cigarette packs, drink containers	**Cups, food trays, food wrappers, cigarette packs, drink containers (UNEP_MARLIN)**
16	Plastic	PL19	Rope	**Rope (UNEP_MARLIN)**

Cartes Déchets Plages [2001-2018]

Top 5 items percentage per beach per year

Calcul :

Calcul de l'abondance de ces items et classification décroissante en % :

$$Itemtype\% = \frac{Itemquantity(normalizedat100m)ofeachitemttype}{\sum itemquantities(normalizedat100m)ofallitemtypes} * 100$$

Cartes Déchets Plages [2001-2018]

Smoking related items / Fishing related items / Plastic bags related items abundance per beach per year

Calcul :

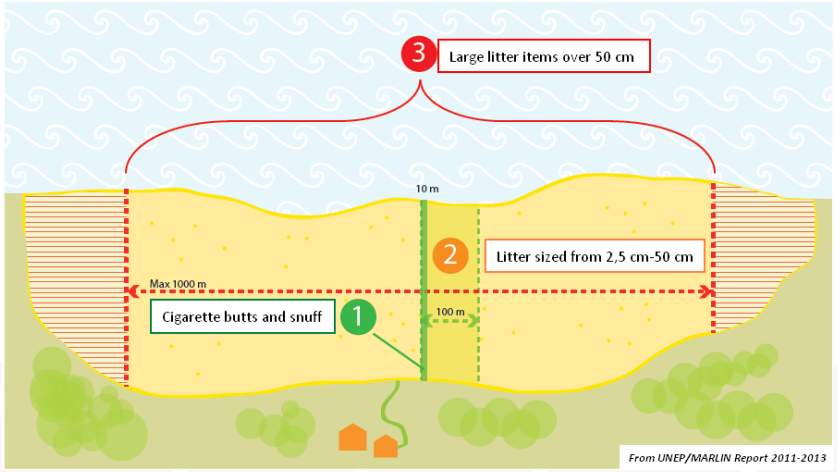
$$Specificitemsabundance = \frac{\sum specificitemsquantities(normalizedat100m)}{Numberofsurveysontheyear}$$

Cartes Déchets Plages [2001-2018]

Smoking related items abundance

- **UNEP_MARLIN** protocol different

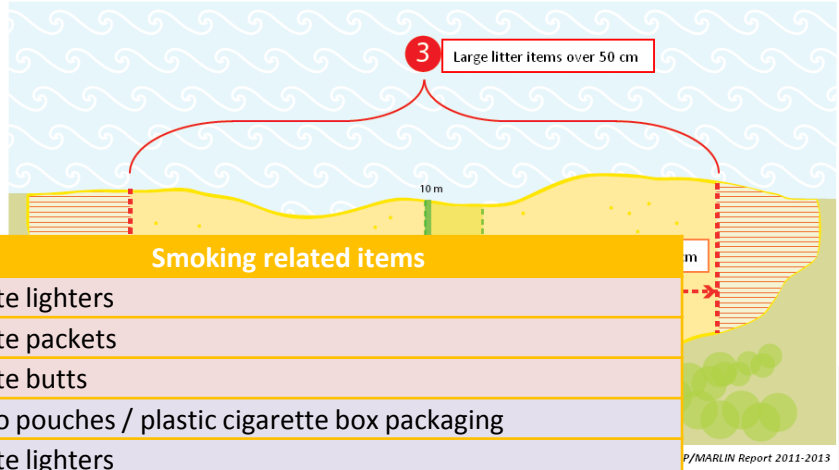
→ Carte séparée



Cartes Déchets Plages [2001-2018]

Smoking related items abundance

- **UNEP_MARLIN** protocol different
- → Carte séparée



- **16 items**

Reference list	Item code	Smoking related items
OSPAR	16	Cigarette lighters
OSPAR	63	Cigarette packets
OSPAR	64	Cigarette butts
TSG_ML	G25	Tobacco pouches / plastic cigarette box packaging
TSG_ML	G26	Cigarette lighters
TSG_ML	G27	Cigarette butts and filters
TSG_ML	G152	Cigarette packets
UNEP	PC03	Cups, food trays, food wrappers, cigarette packs, drink containers
UNEP	PL10	Cigarette lighters
UNEP	PL11	Cigarettes, butts & filters
UNEP_MARLIN	OR01	Snuff, swedish snus
UNEP_MARLIN	PC03	Cups, food trays, food wrappers, cigarette packs, drink containers
UNEP_MARLIN	PL10	Cigarette lighters
UNEP_MARLIN	PL11	Cigarettes, butts & filters
ITA	IT31	Packets of cigarettes or parts
ITA	IT32	Cigarette butts and filters

Cartes Déchets Plages [2001-2018]
Fishing related items abundance

66 fishing related items provenant des 5 listes

Cartes Déchets Plages [2001-2018]
Plastic bag related items abundance

13 items

Reference list	Item code	Plastic bag related items
OSPAR	2	Bags (e.g. shopping)
OSPAR	3	Small plastic bags, e.g., freezer bags
OSPAR	60	Bags
OSPAR	112	Plastic bag ends
TSG_ML	G2	Bags
TSG_ML	G3	Shopping Bags incl. pieces
TSG_ML	G4	Small plastic bags, e.g. freezer bags incl. pieces
TSG_ML	G5	Plastic bag collective role; what remains from rip-off plastic bags
UNEP	PL07	Plastic bags (opaque & clear)
UNEP	PL16	Sheeting (tarpaulin or other woven plastic bags, palette wrap)
UNEP_MARLIN	PL07	Plastic bags (opaque & clear)
UNEP_MARLIN	PL16	Sheeting (tarpaulin or other woven plastic bags, palette wrap)
ITA	IT1	Envelopes, shoppers, garbage bags / small plastic bags, eg, freezer bags / central part tear-off roll of plastic bags

Cartes Déchets Plages [2001-2018]

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Produits Déchets fond

Journée SEXTANT 18/06/2019

Cartes déchets fond [2006-2018]

- 2 protocols differents / 3 listes differentes :
  - OSPAR_BITS / ICES list :RECO-LT and C_TS_REV
  - MEDITS / MEDITS list

- Pas d’harmonisation pour le moment (en cours TGML DCSMM)

Cartes déchets fond [2006-2018]
Trawls locations

8 types de filets déployés pendant les campagnes d'évaluation de stocks de poissons sur le fond :

1) « Baka trawl »
2) « Beam trawl »
3) « GOC 73 bottom trawl»
4) « GOV trawl »
5) « Large TV trawl »
6) « Norwegian Campell trawl »
7) « Porcupine Baka trawl »
8) « Small TV trawl »

Cartes déchets fond [2006-2018]
Total abundance

- Calculée avec la surface balayée en utilisant l'écartement des ailes qui dépend du type d'engin de pêche.
  - Cette information n'est pas systématiquement disponible → évolution phase 4

- Calcul :

Number of Litter items per Km² = Nb Items / (Wingspread*Distance trawled)

- **4 classes représentées :**
  - 0 – Percentil 50
  - Percentil 50 – Percentil 75
  - Percentil 75 – Percentil 95
  - > Percentil 95

Cartes déchets fond [2006-2018]
Material categories percentage

Harmonisation entre les 2 listes : 10 catégories

Material categories Harmonization	ICES Material categories	MEDITS Material categories
Glass/Ceramics	Glass/Ceramics	Glass / Ceramic
Metal	Metals	Metal
Miscellaneous	Miscellaneous	
Cloth (textil) / Natural fibres		Cloth (textil) / Natural fibres
Other		Other + Unspecified
Natural products	Natural products	
Paper and Cardboard		Paper and Cardboard
Wood processed (palettes, crates, etc…)		Wood processed (palettes, crates, etc…)
Plastic	Plastic	Plastic
Rubber	Rubber	Rubber

Calcul :

$$Material\% = \frac{\sum itemquantitiesofeachmaterialcategory}{\sum itemquantitiesofallcategories} * 100$$

Cartes déchets fond [2006-2018]
Top 5 items percentage

Harmonisation entre les 2 listes – 8 items :

Material categories harmonized	Item code	Item name harmonized
Plastic	ICES A7	**Synthetic rope**
Plastic	MEDITS L1j	**Others plastic**
Natural products	ICES E5	**Other natural products**
Plastic	ICES A3 MEDITS L1a	**Plastic bag** **Plastic Bags**
Plastic	ICES A2 MEDITS L1d	**Plastic sheet** **Plastic Sheets (table covers, etc…)**
Plastic	MEDITS L1f	**Fishing nets (polymers)**
Plastic	ICES A5	**Plastic fishing line (monofilament)**
Cloth (textil) / Natural fibres	MEDITS L5a	**Clothing (other than polymers)**

Calcul

$$Itemtype\% = \frac{Itemquantityofeachitemttype}{\sum itemquantitiesofallitemtypes} * 100$$

Cartes déchets fond [2006-2018]
Fishing & Plastic bags related items abondance

- Même calcul que l'Abondance totale :

Number of specific litter items per Km² =
nb specific Items / (Wingspread*Distance trawled)

- **4 classes représentées :**
  - 0 – Percentil 50
  - Percentil 50 – Percentil 75
  - Percentil 75 – Percentil 95
  - > Percentil 95

Cartes déchets fond [2006-2018]
Fishing related items abundance

11 Items provenant des 2 listes :

Reference list	Item code	Item name
ICES	A5	Plastic fishing line (monofilament)
ICES	A6	Plastic fishing line (entangled)
ICES	A7	Synthetic rope
ICES	A8	Plastic fishing net
ICES	B3	Fishing related metal
ICES	C3	Rubber bobbins (fishing)
MEDITS	L1i	Synthetic Ropes / Strapping bands
MEDITS	L1g	Fishing lines (polymers)
MEDITS	L1f	Fishing nets (polymers)
MEDITS	L3f	Fishing related (hooks, spears, etc…)
MEDITS	L5c	Natural fishing ropes

Cartes déchets fond [2006-2018]
Plastic bags related items abondance

- 2 Items provenant des 2 listes :

Reference list	Item code	Item name
ICES	A3	Plastic bag
MEDITS	L1a	Plastic bags

Cartes déchets fond [2006-2018]

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Merci pour votre attention

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