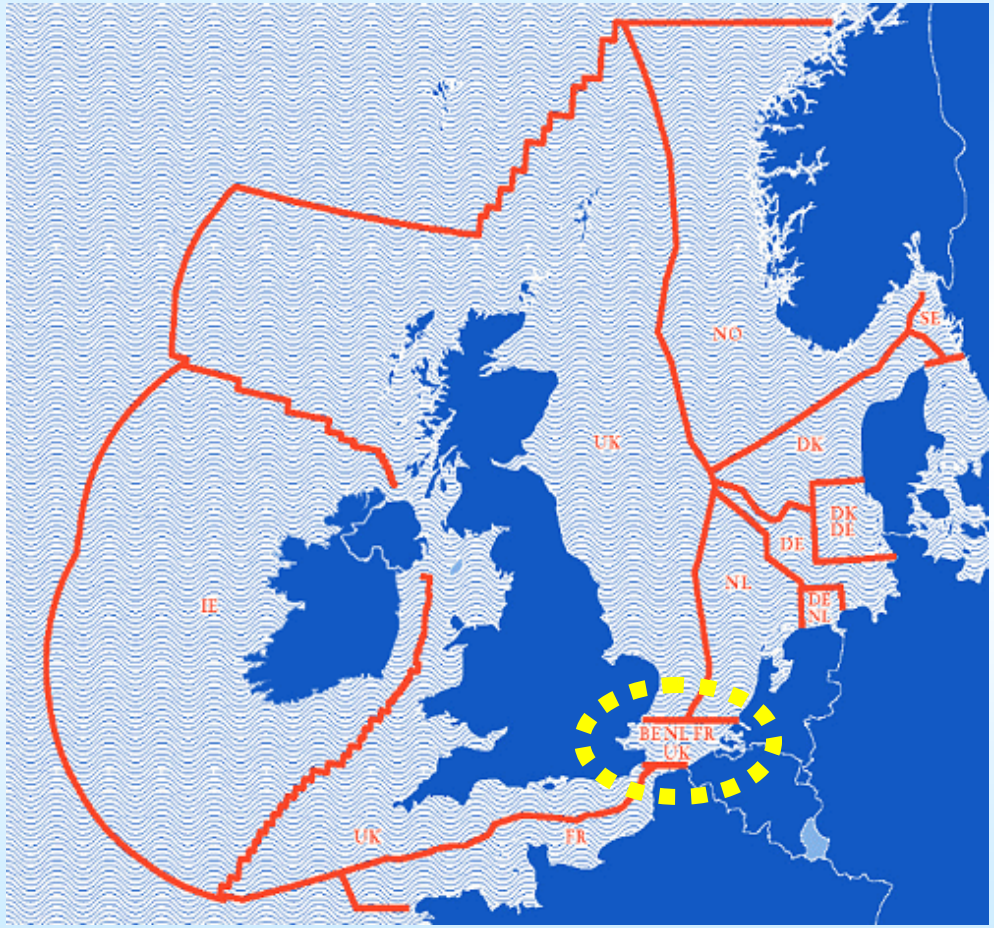
Results of 20 years of aerial surveillance of Belgian marine areas in the North Sea/Channel (Pas-de-Calais)

Ronny Schallier (MUMM)

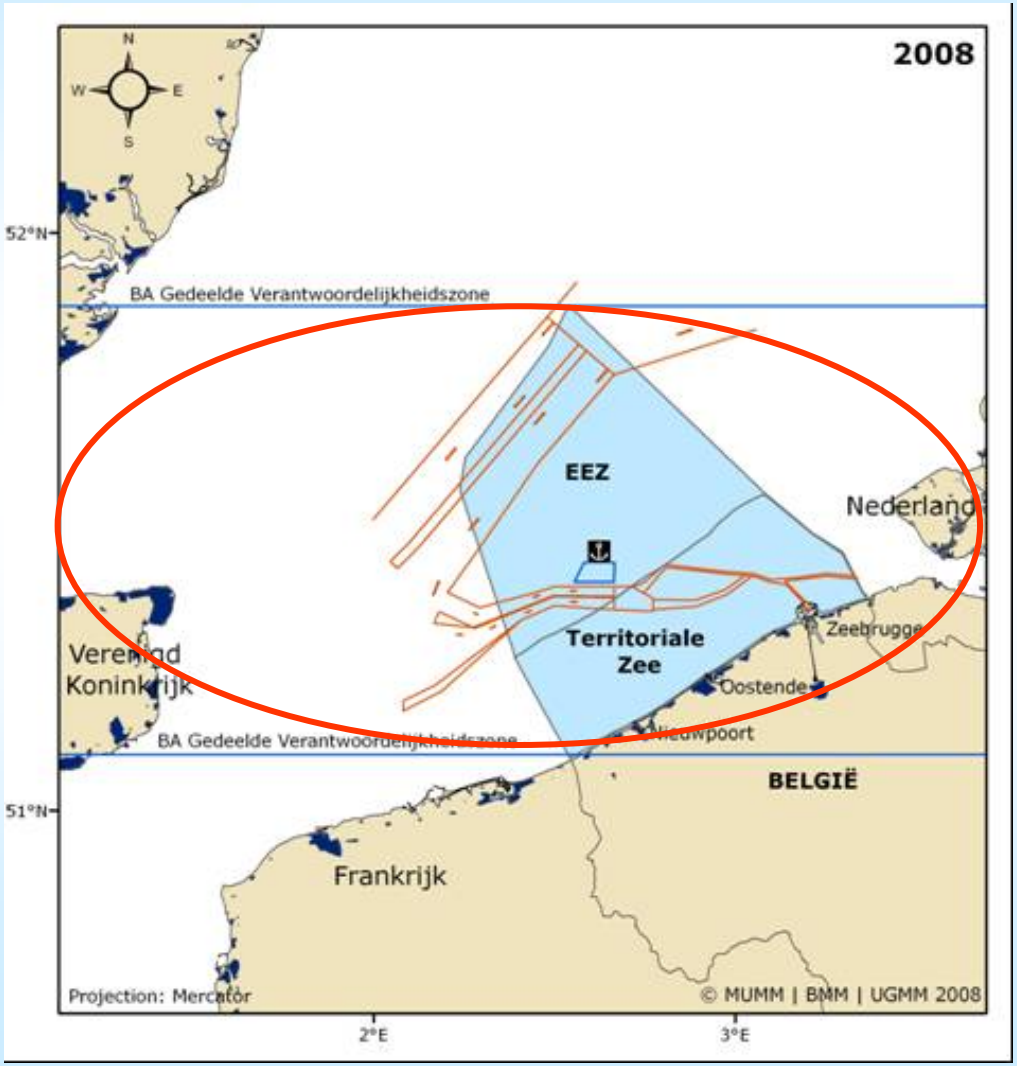
Ref.:

Lagring, R., Degraer, S., de Montpellier, G., Jacques, T., Van Roy, W., and Schallier R. (2012). Twenty years of Belgian North Sea aerial surveillance: A quantitative analysis of results confirms effectiveness of international oil pollution legislation. ***Marine Pollution Bulletin Vol.64****, Issue 3 (March 2012), pp. 644-652.*

Belgian surveillance area



Belgian surveillance area

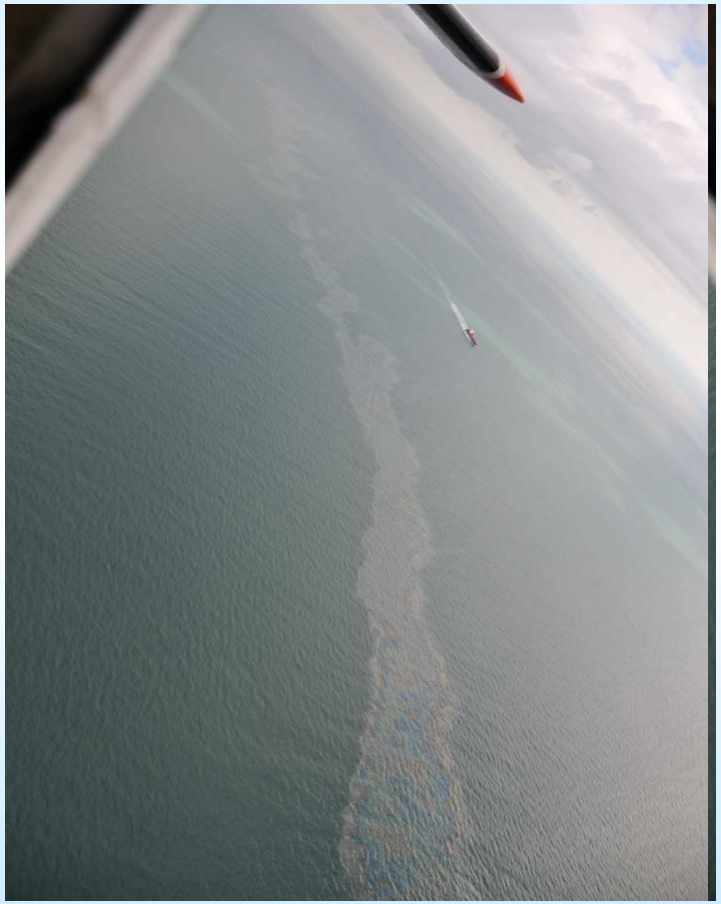


BE waters +

Bonn Agreement 'Joint Responsibility Zone'

= A KEY AREA for SHIPPING

Belgian North Sea aerial survey Programme



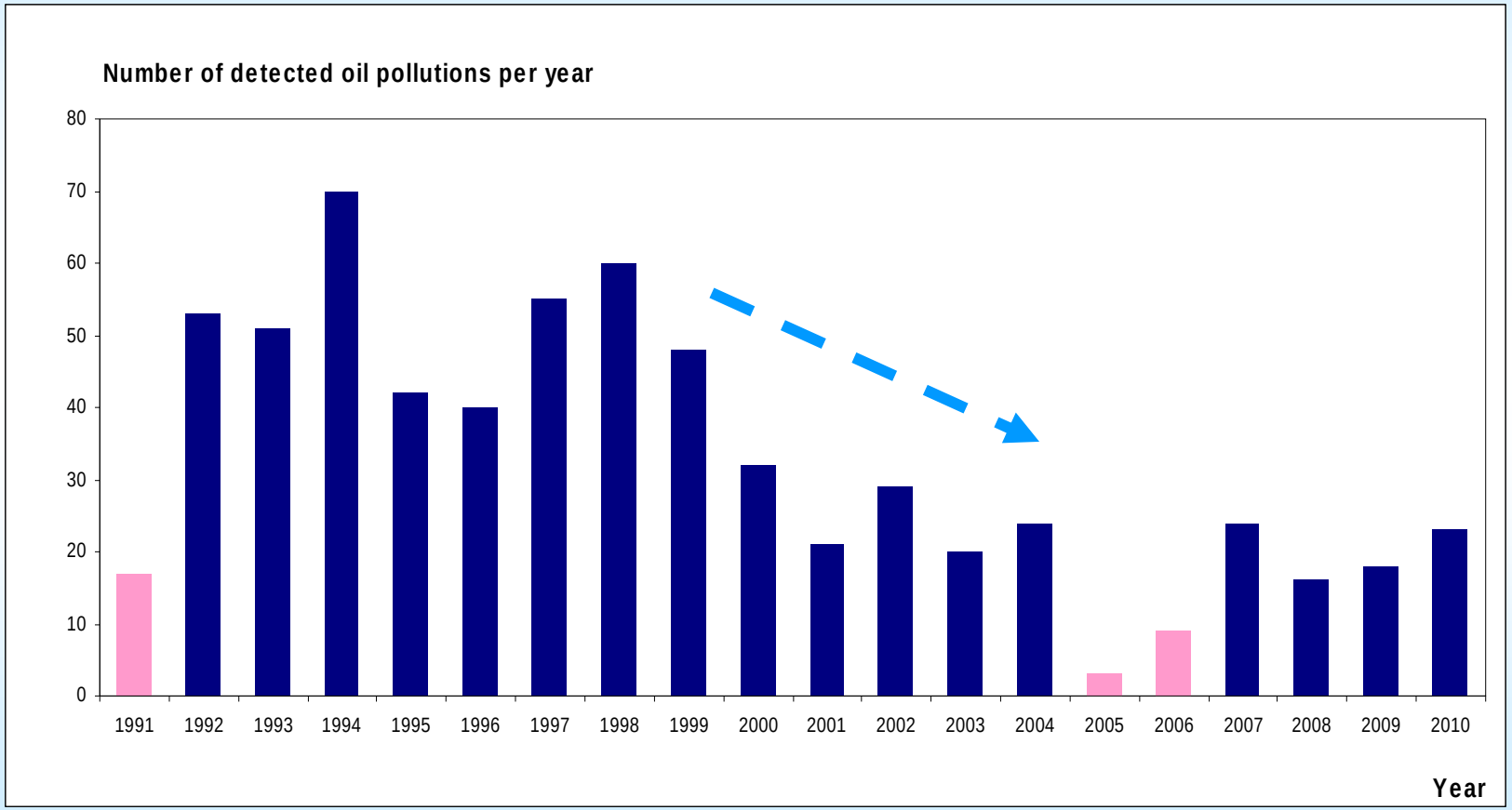
- Framework of BONN AGREEMENT

- Since 1991 :
  - ~4.000 flights organized
  - 4.600 flight hours above sea
  - 767 slicks observed/detected, of which:
    - 655 → mineral oil
    - 112 → HNS or unknown (night) detections

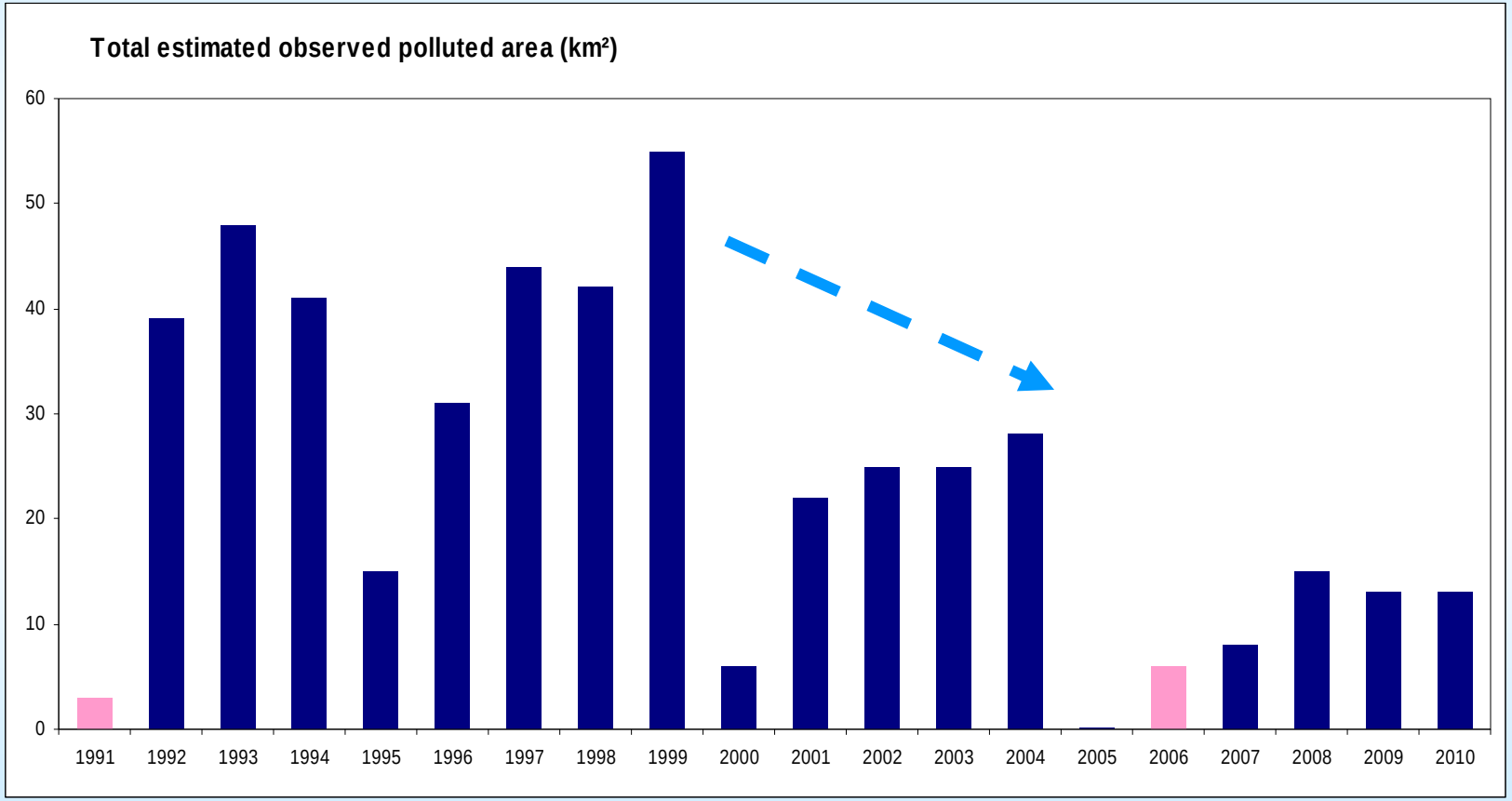
- Statistical analysis on oil slick data 1991-2010:

→ to find <u>trends in oil spills</u>

'Rough' data:
Number of oil slicks

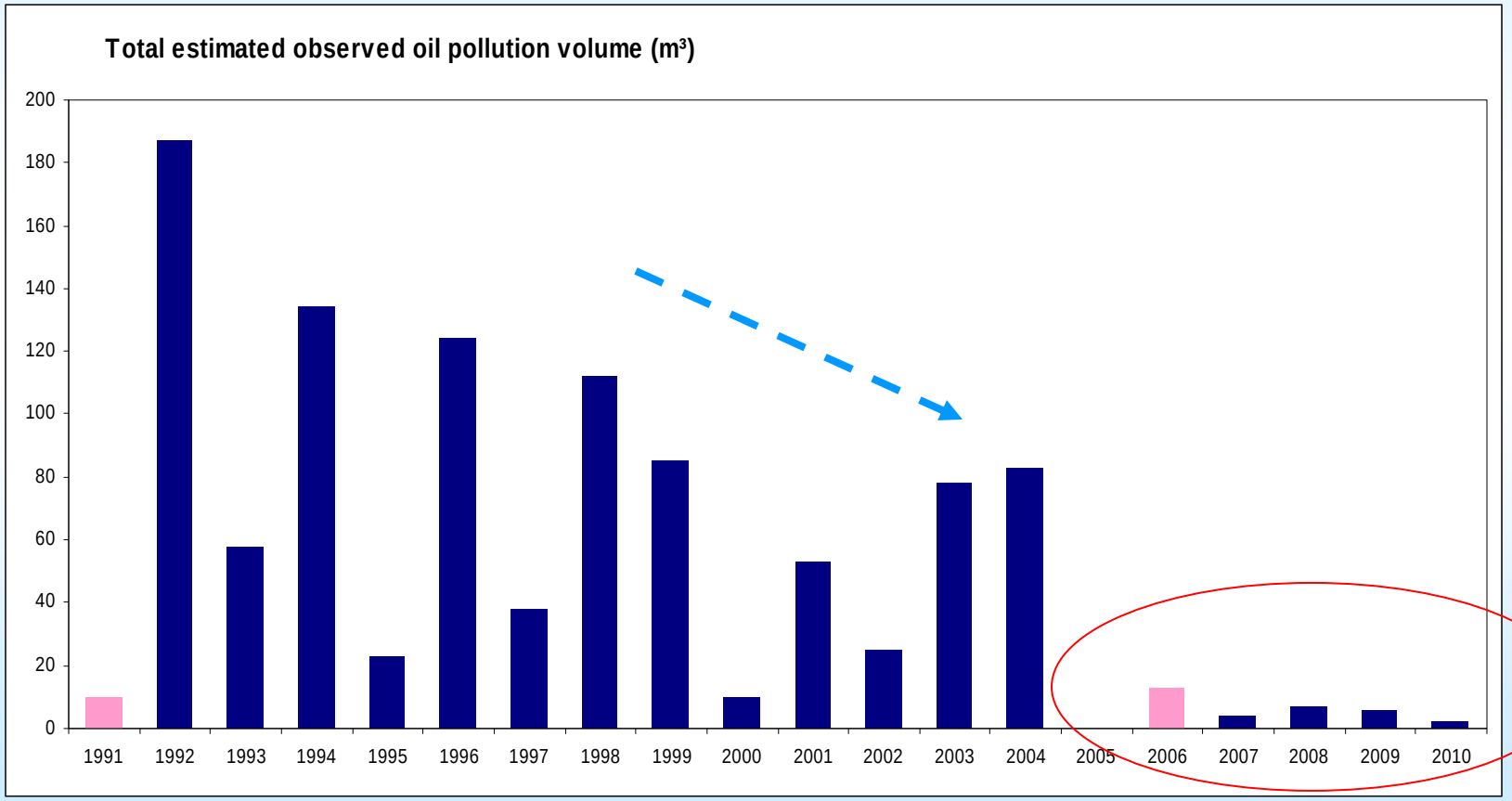


'Rough' data:
Polluted surface



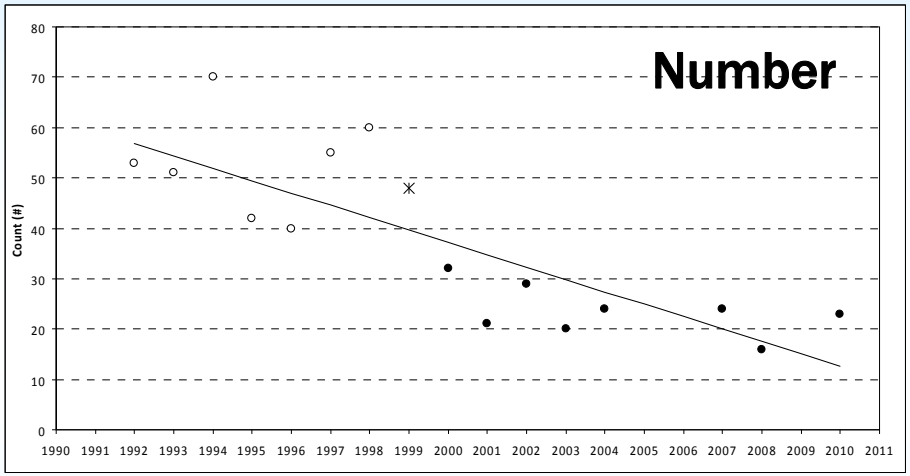
'Rough' flight data:
Oil volume

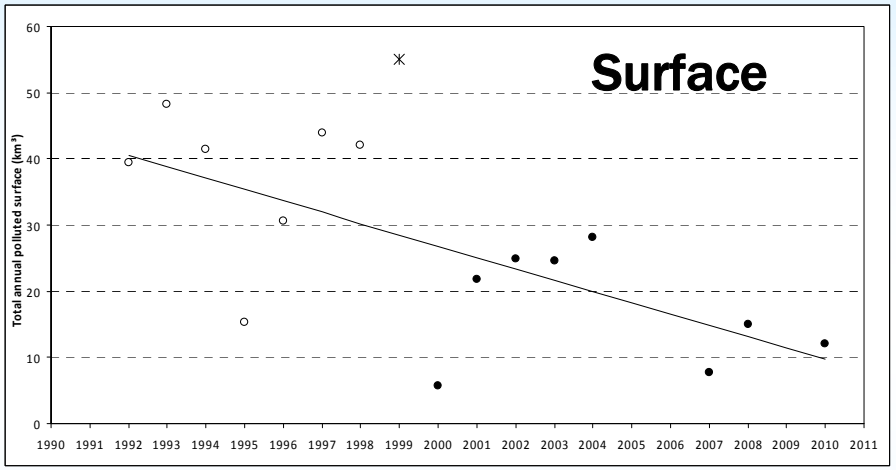
cf. correction factor for 'old' BA colour code (method of "least squares")

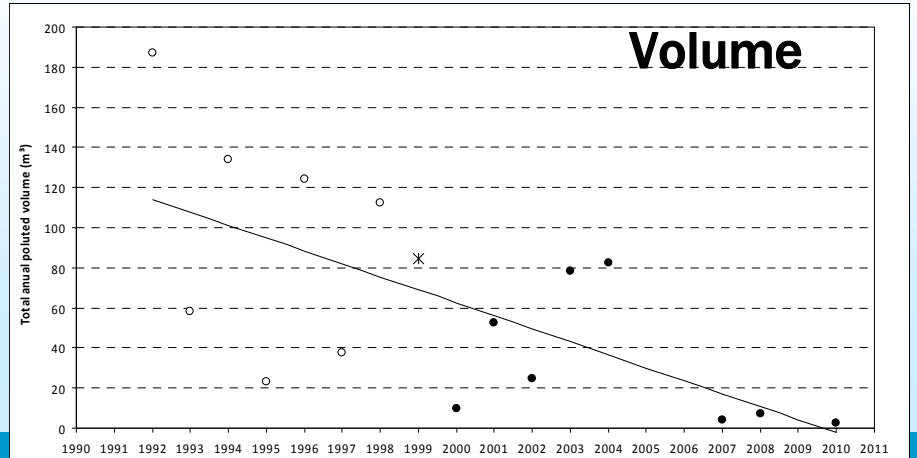


(1.) Linear regression analysis

Significant DECREASE in Number, Surface & Volume







(2.) Statistical comparison of 3 Periods

Decrease = Owing to **many policy measures** !

- Global, European, regional & national
- both *preventive* (IMO) & *repressive* (prosecution/enforcement)

BUT, 2 policy measures are considered CRUCIAL:

1. **IMO: North Sea 'MARPOL Special Area'**

   → **Hypothesis 1**: turning point year: 1999

2. **EC: Directive on Port Reception facilities**

   → **Hypothesis 2**: turning point years: 2004-05

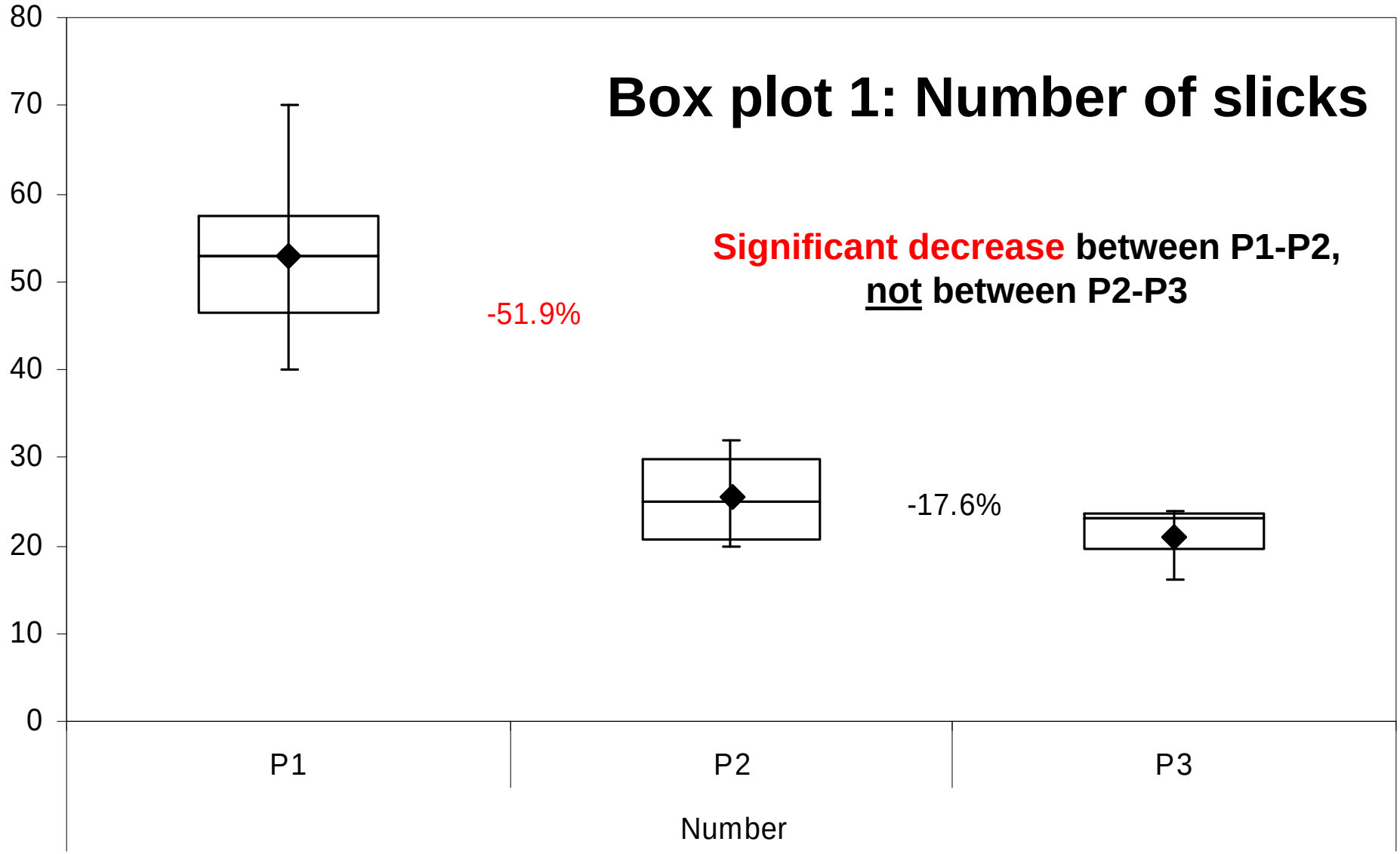
→ **COMPARISON OF 3 distinct PERIODS:**

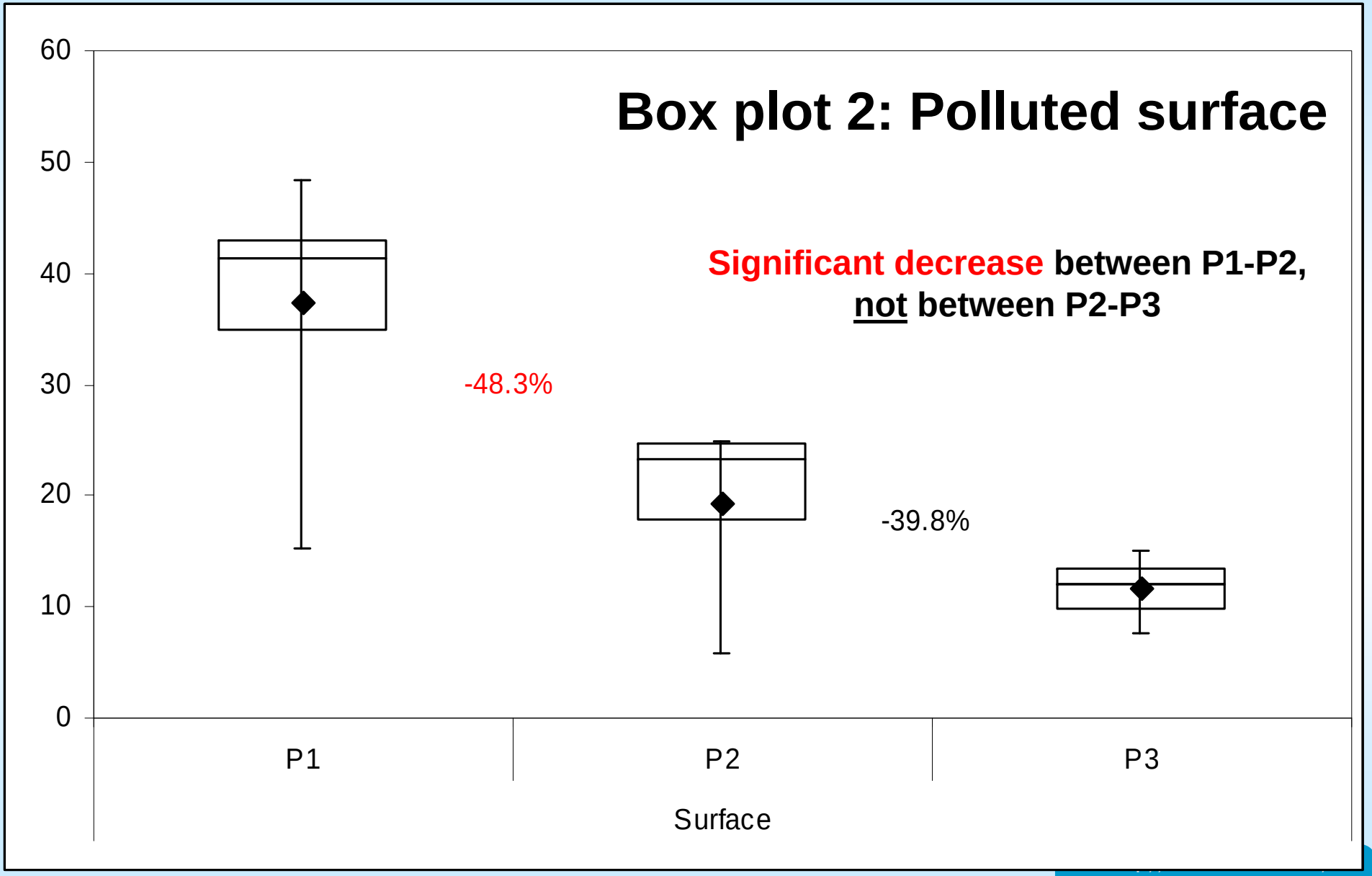
P1: 1992-1998 - P2: 2000-2003 - P3: 2007-2010

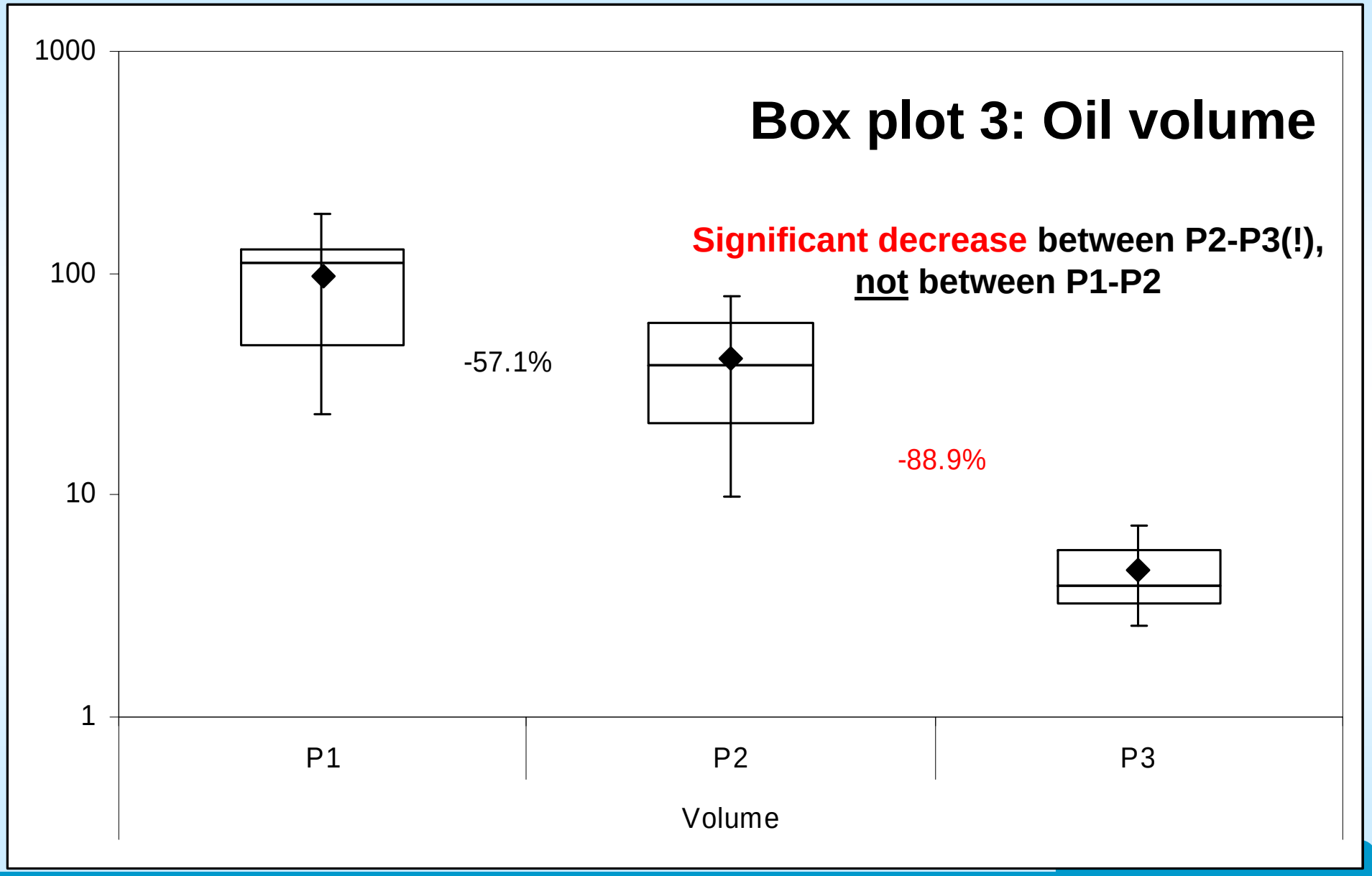
Amount of oily waste
delivered in ports of Antwerp & Rotterdam (2003-2009)
(ship-generated waste and cargo-associated disposals)

Source: Rotterdam & Antwerp Port Authorities

Volumes (m^3)	2003	2004	2005	2006	2007	2008	2009
Rotterdam	114.280	131.650	145.426	175.918	176.481	208.976	199.668
Antwerp	(no data)	42.346	66.972	84.328	114.125	114.607	108.645

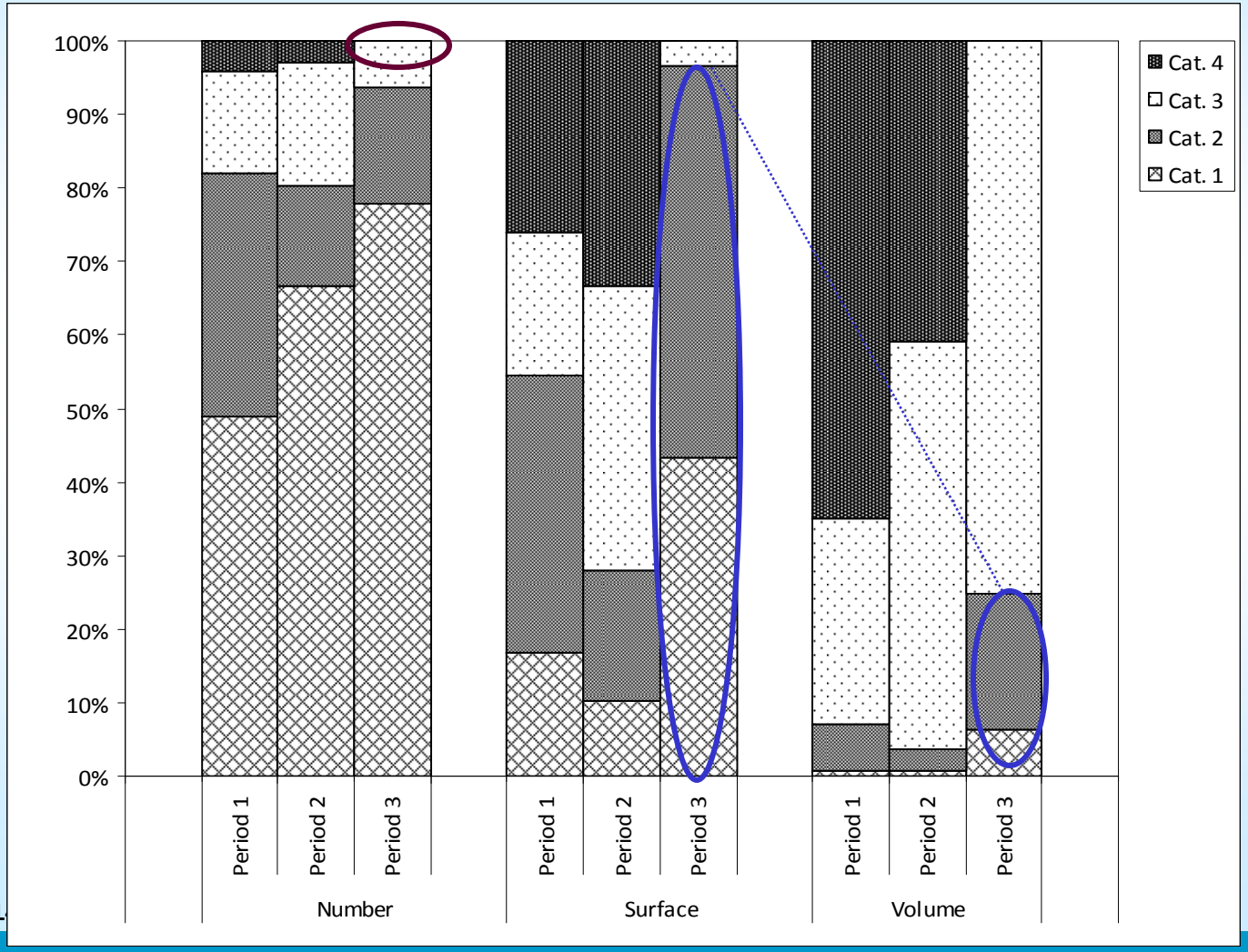

Box plot 1: Number of slicks
Significant decrease between P1-P2,
not between P2-P3
-51.9%
-17.6%
80
70
60
50
40
30
20
10
0
P1
P2
P3
Number


Box plot 2: Polluted surface
Significant decrease between P1-P2,
not between P2-P3
-48.3%
-39.8%
60
50
40
30
20
10
0
P1
P2
P3
Surface


Box plot 3: Oil volume
Significant decrease between P2-P3(!),
not between P1-P2
1000
100
10
1
-57.1%
-88.9%
P1
P2
P3
Volume

Comparison per Volume Category

Cat.1: < 0.1 m³ / Cat.2: 0.1-1 m³ / Cat.3: 1-10 m³ / Cat.4: >10 m³



- No more 'Big' spills (Cat.4) in Period 3...

- 'Minor' spills (Vol.Cat. 1+2) represent 95% of surface in Period 3

Conclusions:

- **Sharp decline in slick numbers, surface, volume … and polluters**

- Owing to effective policy measures:
  - **'Special Area' designation** (IMO)
  - **Improved port reception facilities** (EC Dir.)

- But probably also owing to:
  - Increased surveillance, enforcement & prosecution efforts
  - Use of cleaner fuels & more incinerators o/b vessels; better ship management

- **Job is not finished**

→ OSPAR Ecol. Quality Objective (10% oiled guillemots) in sight,but not (yet) reached

Aerial surveillance in a new Era?

Discussion in Bonn Agreement → strategic analysis needed

(Belgian reflection:)

- **Pollution control → new challenges ahead !**
  - HNS (MARPOL Annex II)
  - 'Waste' (MARPOL Annex V)
  - Atmospheric poll. (MARPOL Annex VI)

- **Increase in international co-operation…?**
  - Joint poll. control flights (CEPCO)
  - Importance of controlling offshore installations (TdH)
  - Support from satellite surveillance (CleanSeaNet – EMSA)

- **Evolution from 'Pollution control' → 'Maritime Surveillance' Aircraft:**
  - Also fishery control, navigation infringements, customs, control of activities at sea under governmental permit, scientific monitoring, …
  - In broader 'Coastguard' context

Questions?