



JOINT EUROPEAN RESEARCH INFRASTRUCTURE NETWORK FOR COASTAL OBSERVATORIES

BEST PRACTICES ON FIXED PLATFORMS

AZTI-TECNALIA

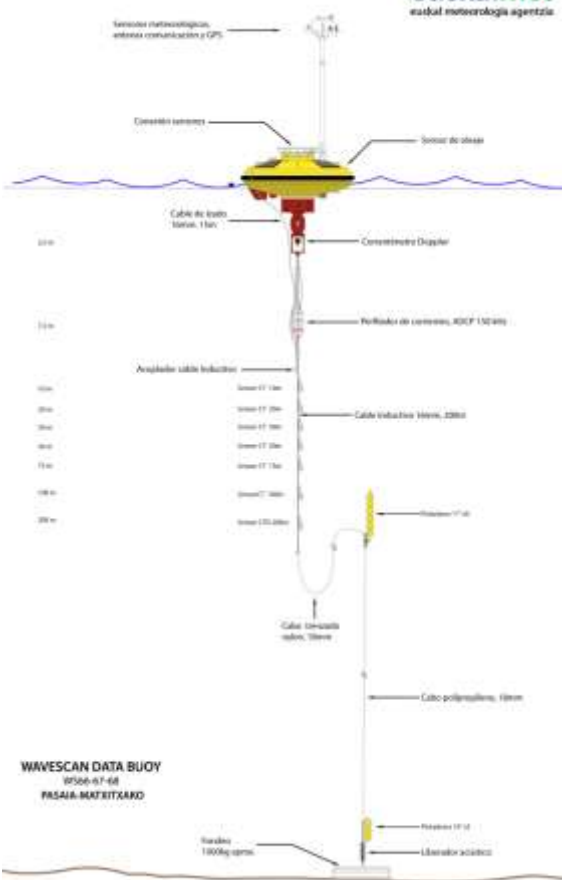
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BEST PRACTICES ON FIXED PLATFORMS

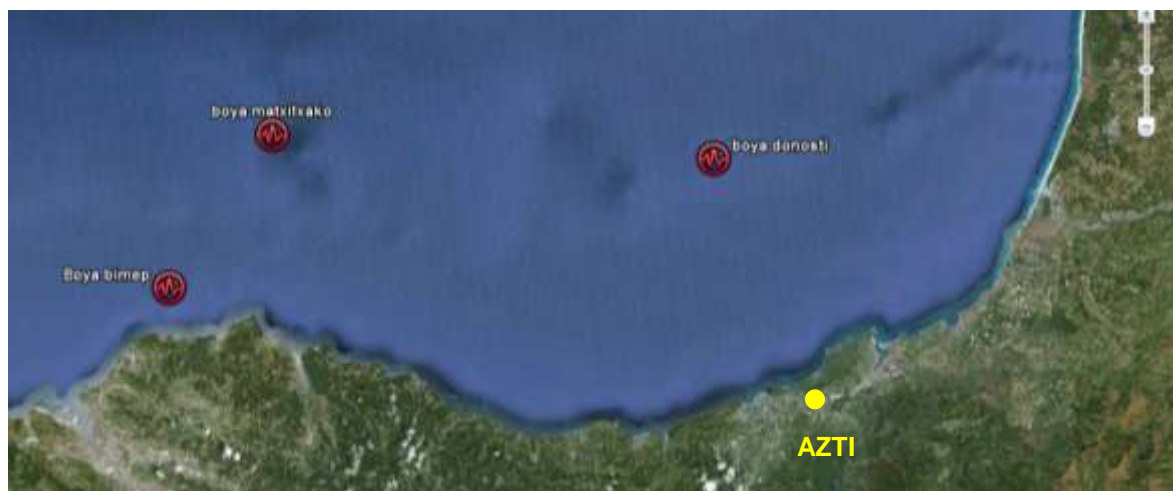


euskalmet
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The maintenance of the buoys is based on:

- 2 moored buoys and one **SPARE BUOY** on land
- Maintenance work is made **ON LAND**
- Deployments every **SIX MONTHS**





BEST PRACTICES ON FIXED PLATFORMS



OPERATION BASES:

- NO ROOM FOR IMPROVISATION: TRAINING AND PREPARATION
- STABLE STAFF: ROLES IN THE MANEUVER, NOBODY'S A BOTTLENECK!!
- REPLICABILITY & TRACEABILITY
- AS MUCH TASKS AS POSSIBLE ON LAND
- REPLACEMENT SENSORS, MATERIALS, COMM SYS,...: TESTED ON THE SPARE BUOY BEFORE DEPLOYMENT

LIMITATIONS:

- *FORCED TO WORK WITH OPPORTUNITY VESSELS: 3 BOATS/5 YEARS*

BEST PRACTICES ON FIXED PLATFORMS: AVAILABLE OPPORTUNITY VESSELS



BEST PRACTICES ON FIXED PLATFORMS: DEPLOYMENTS



Mooring #		BUOY WAVESCAN WS66		
Buoy	Total	Mooring period	Position	Coordinates
1	3	Junio 2007 Abril 2008	Matxixako	43° 38.196' N 002° 43.096' W
2	6	Febrero 2009 Marzo 2010	Donostia	43° 33,507' N 002° 01.482' W
3	9	Marzo 2010 Noviembre 2010	Donostia	43° 33.673 'N 002° 01.474' W
4	12	Mayo 2011 Septiembre 2011	Matxixako	43° 37.475' N 002° 43.469' W
5	13	Noviembre 2011 -	Matxixako	43° 37.463' N 002° 41.960' W

Mooring #		BUOY WAVESCAN WS67		
Buoy	Total	Mooring period	Position	Coordinates
1	1	Enero 2007 Junio 2007	Matxixako	43° 37.980' N 002° 41.550' W
2	4	Junio 2007 Noviembre 2007	Donostia	43° 33.996' N 002° 01.668' W
3	6	Abril 2008 Junio 2009	Matxixako	43° 38.148' N 002° 41.634' W
4	11	Marzo 2011 Noviembre 2011	Donostia	43° 33.859' N 002° 01.395' W

Mooring #		BUOY WAVESCAN WS68		
Buoy	Total	Mooring period	Position	Coordinates
1	2	Enero 2007 Junio 2007	Donostia	43° 33.765' N 02° 01.433' W
2	5	Diciembre 2007 Febrero 2009	Donostia	43° 34.200' N 002° 01.440' W
3	7	Junio 2009 Junio 2009	Matxixako	43° 37.6444' N 002° 41.130' W
4	8	Agosto 2009 Marzo 2010	Matxixako	43° 37.446' N 002° 41.332' W
5	10	Mayo 2010 Mayo 2011	Matxixako	43° 37.445' N 002° 41.340' W

BEST PRACTICES ON FIXED PLATFORMS: POST-RECOVERY: ON BOARD



- *Visual inspection*
- *Pictures*
- *Switch off the buoy*
- *First cleaning: mussels, barnacles, ...hard fouling.*
- *Disassemble of the elements of the system*
- *Get the buoy ready for unloading on port*

BEST PRACTICES ON FIXED PLATFORMS: BUOY RECEPTION ON BOARD



- **FOULING CLEANING**
- **PREPARE THE BUOY FOR TRANSPORTATION**



BEST PRACTICES ON FIXED PLATFORMS: POST- DEPLOYMENT:ON LAND



- Visual inspection
- Fouling mechanical cleaning
- Data download: Buoy, CTs, ADCP
- Fouling chemical cleaning
- *.log files : “History” of the mooring

• STATE OF THE BUOY REPORT



LIST OF ELEMENTS TO BE REPLACED



PURCHASE

STOCK

BEST PRACTICES ON FIXED PLATFORMS: LAND FRAME



BEST PRACTICES ON FIXED PLATFORMS: POST- DEPLOYMENT:ON LAND



After deployment and asap:

- Anodes replacement
- Buoy painting with anti-fouling paint
- Sensors selection and config. files creation
- Buoy HD cleaning
- System assembly and testing for a work journey
- Disassembly & storage

BEST PRACTICES ON FIXED PLATFORMS:

PRE- DEPLOYMENT:ON LAND

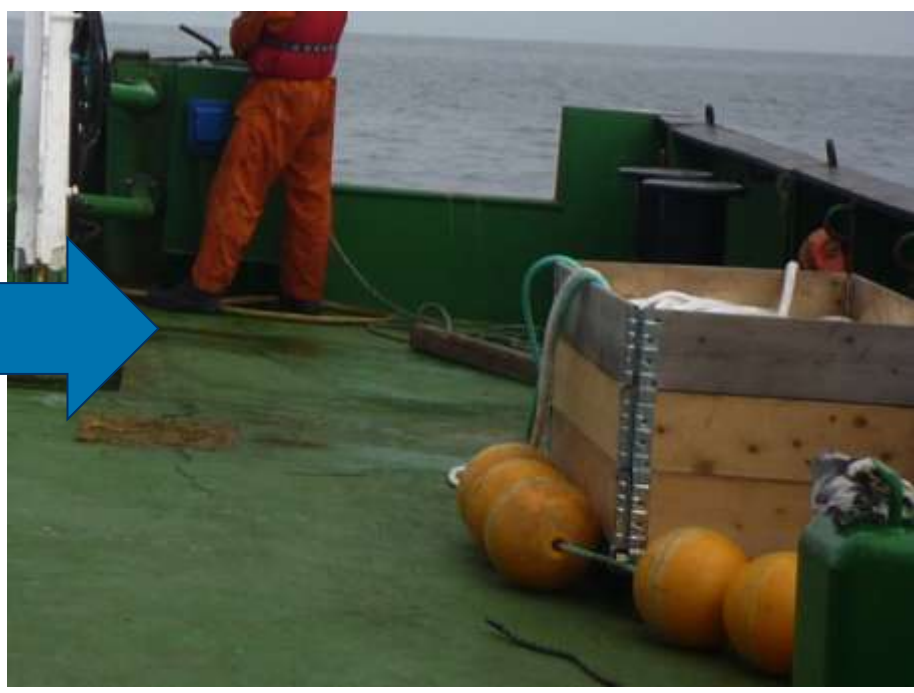


One week before the deployment:

- Inductive cable measurement, marking and reeling
- New ropes: from a reel to the box & line assembly
- Shackles, chain and line buoys preparation
- ADCP, CTs and AR tape protection. IDs visible
- Switch on of the ADCP and CTs
- System assembly: System and comm sys test
- Special telegram name while testing
- Cabling protection
- Special tool set
- Disassembly, elements preparation to go on board
- The buoy is filled with N₂



BEST PRACTICES ON FIXED PLATFORMS: ROPES



REPLACED AFTER EVERY MOORING!!

BEST PRACTICES ON FIXED PLATFORMS: PRE- DEPLOYMENT:ON BOARD



While sailing to the mooring point:

- System assembly: cables are fixed to the line
- Buoy connection to a PC: Elements testing
- Inductive cable unreeling and CT installation
- AR connected to the mooring and armed
- ADCP lower part to the buoy. Small trigger
- Buoy to the crane. Big trigger

Once all the line is on water, the mooring is released at the mooring point. This point will be the mooring point



BEST PRACTICES ON FIXED PLATFORMS: DIFFERENT VESSELS: SAME WAY OF WORKING 1





BEST PRACTICES ON FIXED PLATFORMS: DIFFERENT VESSELS: SAME WAY OF WORKING 2

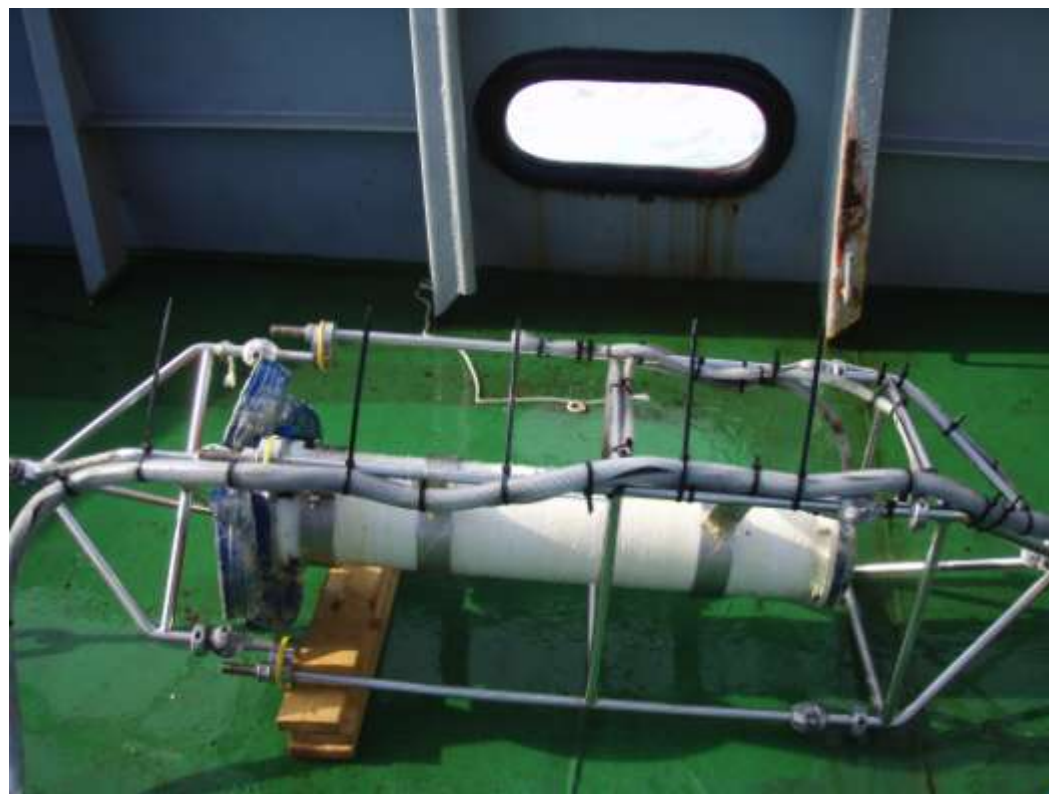




BEST PRACTICES ON FIXED PLATFORMS: CABLING PROTECTION



- CABLING
- WEAKEST PART OF THE SYSTEM
- PROTECTED WITH HOSEPIPE
- MAIN “HOLE PRODUCER” IN REAL TIME SERIES



BEST PRACTICES ON FIXED PLATFORMS: ADCP HEIGHT



OBJECTIVE:
TO REDUCE THE SYSTEM
TOTAL HEIGHT, DUE TO THE
CRANE LIMITATION





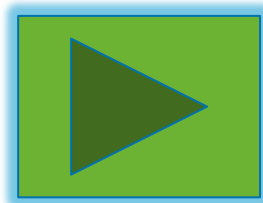
BEST PRACTICES ON FIXED PLATFORMS: TO HELP THE MEMORY



BEST PRACTICES ON FIXED PLATFORMS: RECORDING THE MOORING OPERATIONS



- Best tool for sea operations **analysis:**
improvements
- **Unattended**
- Help to give **visibility!!**





BEST PRACTICES ON FIXED PLATFORMS: MAINTENANCE OPERATIONS TRACEABILITY



SIMPLE CHECK LIST

Fecha	MATXITXAKO		BOYA WS 66 67 68			
Fondeo n°	DONOSTIA		CH	JB	LC	MN
Acción	OK	Observaciones				
Antifouling	Fecha	MATXITXAKO		BOYA WS 66 67 68		
Protección cables	Fondeo n°	DONOSTIA		CH	JB	MN
*.xml fondeo y boya	Acción	OK	Observaciones			
Vaciado memoria	Conectar boya a PC	Fecha	MATXITXAKO		BOYA WS 66 67 68	
Revisión cadena	Cables y cadena abajo	Fondeo n°	DONOSTIA		CH	MN
Cambio grilletes	Conectar equipos	Acción	OK	Observaciones		
Cambio ánodos Zn	Arrancar boya	Fecha	MATXITXAKO		BOYA WS 66 67 68	
CI marcado	Check sistema PC	Fondeo n°	DONOSTIA		CH	MN
CI bobinado	Protección cables	Acción	OK	Observaciones		
Cabo encajado	Bridar cables	Fecha	MATXITXAKO		BOYA WS 66 67 68	
Unión cabos	Revisar cables	Fondeo n°	DONOSTIA		CH	MN
Preparar fondeo	Revisar cadena	Acción	OK	Observaciones		
Acoustic release	Unir cabos b-v	Fecha	MATXITXAKO		BOYA WS 66 67 68	
Trenes de bolos	Trenes de bolos	Fondeo n°	DONOSTIA		CH	MN
Iniciar CTs	Fondeo	Acción	OK	Observaciones		
Iniciar ADCP	Armar disparador acust.	Fecha	MATXITXAKO		BOYA WS 66 67 68	
Check pff 999	Colocar CTs	Fondeo n°	DONOSTIA		CH	MN
Carga baterías	Fijar cable de seguridad	Acción	OK	Observaciones		
Nitrógeno	Colocar disparador	Fecha	MATXITXAKO		BOYA WS 66 67 68	
Cables y cadena sujetos	Desconectar PC	Fondeo n°	DONOSTIA		CH	MN
Incidencias:	Elevar ADCP	Acción	OK	Observaciones		
	Incidencias:	Fecha	MATXITXAKO		BOYA WS 66 67 68	
		Fondeo n°	DONOSTIA		CH	MN
		Acción	OK	Observaciones		
		Proyector a 10 m				
		Código 'enable'				
		Código 'release'				
		Apagar boya				
		Fouling fuera				
		Separar elementos				
		Preparar boya grúa				
		Incidencias:				

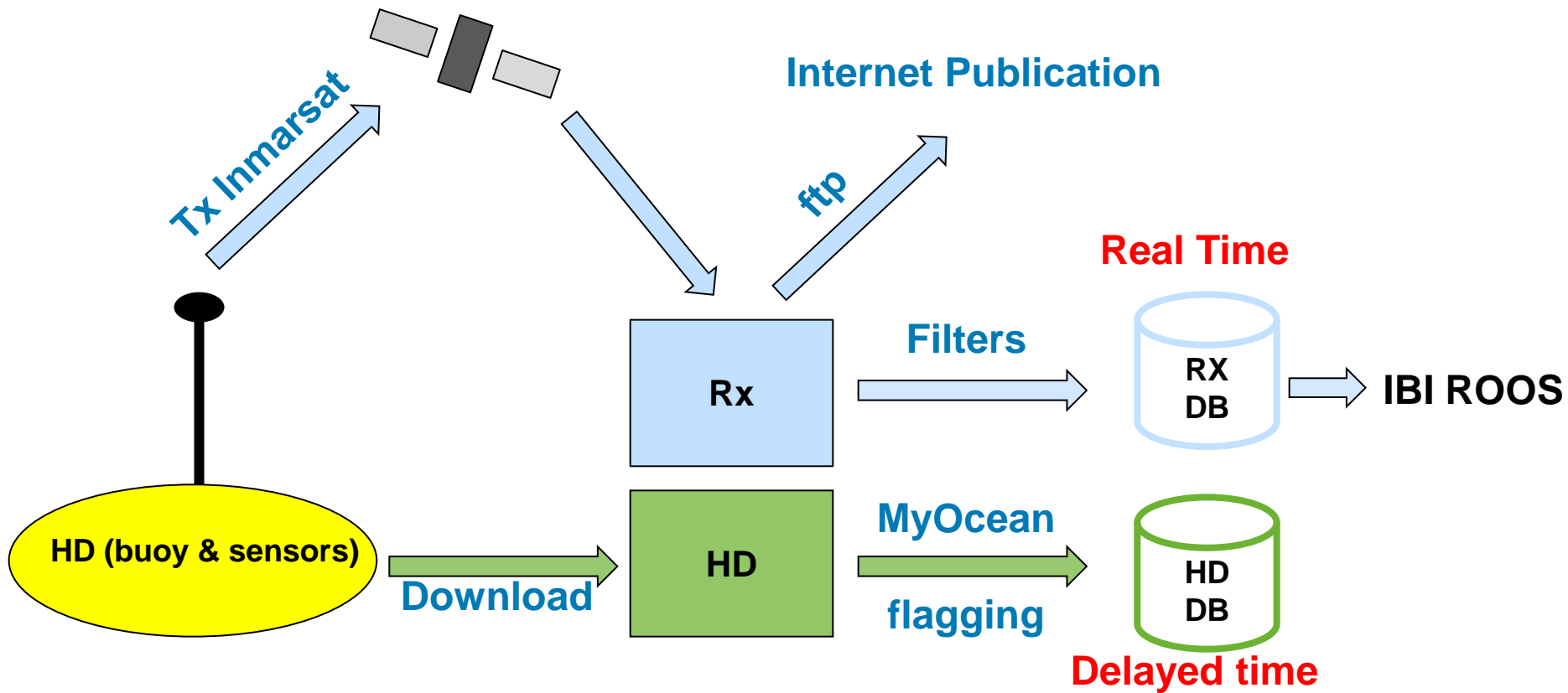
BEST PRACTICES ON FIXED PLATFORMS: ELEMENTS TRACEABILITY



ONE NOTEBOOK PER BUOY: WORKLIFE OF THE SYSTEM



BEST PRACTICES ON FIXED PLATFORMS: DATA HANDLING





BEST PRACTICES ON FIXED PLATFORMS



**ONCE EVERYTHING IS READY,
REST AS MUCH AS YOU CAN!!**

