Project ID 1a12b4 with the title "Testing the possibilities of mapping *Posidonia ocenica* in Adriatic from EO and acoustic data"

Dr. Andreja Radović

Idea

Croatian organizations are preparing to start mapping marine habitats for the first time using EO and acoustic data. I would like to play (test) the usage of multiple EO data together with acoustic multibeam data, side scan sonar data and in preparing optimal spatial sampling and later detecting several marine and habitats, especially spatial distribution of Posidonia oceanica. Hopefully, well mapped Posidonia will be used for better planning of future marine Natura 2000 sites in Croatian part of Adriatic as well research paper will be result of this exercise. Some other habitats of interest can be mapped using EO data due to spatial distribution in water that do not exceed 10 meters together with the coastal habitats.

Methodology: Firsts, grid across the area of interest (Adriatic) will be prepared and already available data for Adriatic will be gridded to the same grid system (bathimetry and it's, geology/sediments, currents etc.). <u>Sentinel S2 data will be used for supervised classification and detection of starting line of</u> <u>Posidonia oceanica in shallow waters. Data prepared in this way will be used to plan optimal sampling for acoustic transects in order to be able to detect</u> <u>lower edge of the habitat. I would like to be in a position to create a model that correctly predicts the presence of the species in the Adriatic and be able to explain the detected spatial distribution of the species. Model will be validated on site. I would like to use Copernicus data mostly but it would be great if some other, higher resolution data is available in the case of failure to detect clear margins for Posidonia. For example Planet/Dove or similar at least for the area in the middle part of Adriatic where is norther limit of the species.</u>

Unfortunately: due to some disagreements in proposed methodology for the realisation of the project only part that is not underlayed is finalised during my stay in Oikon Ltd.

Hystorical data preparation

Data:

- mostly in ESRI Shapefiles
- habitat types, species
- Bathymetry, geology, sediments
- ...

Nd	me	Date modified	туре	SIZE
	20000 Milja_do 2016. god	21.12.2022. 15:36	File folder	
	Brijuni_Sunce	21.12.2022. 15:36	File folder	
	COAST	21.12.2022. 15:37	File folder	
	Dugi otok_Sunce	21.12.2022. 15:36	File folder	
	IOR	21.12.2022. 15:32	File folder	
	Istarska Zupanija_Zavod za prostorno_m	21.12.2022. 15:34	File folder	
	Karta_stanista_2004	21.12.2022. 15:36	File folder	
	Koraljne zajednice_2012_Kruzic	21.12.2022. 15:33	File folder	
	Lastovo_Sunce	21.12.2022. 15:34	File folder	
	Marjan_Geodata	21.12.2022. 15:33	File folder	
	MedMPA_net	21.12.2022. 15:33	File folder	
	Morska_stanista_HAOP	21.12.2022. 15:35	File folder	
	Plaze	21.12.2022. 15:37	File folder	
	Plaze_izor	21.12.2022. 15:34	File folder	
	Plaze_sumarno	21.12.2022. 15:37	File folder	
	SHAPE_Istarska stanista_final.gdb	21.12.2022. 15:36	File folder	
	SHAPE_Istarska stanista_final_HTRS96TM	21.12.2022. 15:31	File folder	
	Sveuciliste_Zadar	21.12.2022. 15:36	File folder	
	Telascica_Sunce	21.12.2022. 15:36	File folder	
	Telasica_infralit_circalit_Park	21.12.2022. 15:36	File folder	
	Udruga Zelena Istra - Posidonia	21.12.2022. 15:31	File folder	
	Unije, Susak, Srakane, Prvic, Goli, Grgur_Sun	21.12.2022. 15:36	File folder	
	Vis_Sunce_Bius_negeoreffer	21.12.2022. 15:31	File folder	
	Zavod javno zdravstvo PG zup	21.12.2022. 15:34	File folder	

- Cleaning, reprojecting data from diverse mapping projects
- Preparation of refferent grids at different scale (100m, 50m, 10m) EPSG:3035
- Gridding hystorical data on referent grids
- Gridding of species data
- Gridding of habitat data at level 2 (national classification)
- Organising in spatial database (PostGres/PostGIS)
- Everything prepared by R scripts
- Planned:
 - preparation of spectral signatures for each habitat class (yearly cicle)
 - Preparation of spectral signatures across polygons with Posedonia ceanica
 - Preparation of zonal statistics for the species for spectral signatures in different parts of Adriatic / season
 - Preparation of script for download EO data (Sentinel S1 and S2) images for years that matches (preferably ot to download but to send metadata on images and make pixel based supervised classification
 - ...

• Cleaning, reprojecting data from diverse mapping projects

- Preparation of refferent grids at different scale (100m, 50m, 10m) EPSG:303.
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1120_petricioli_sites_with_Posidonia_20.dbf	20.12.2022. 14:32	DBF File
1120_petricioli_sites_with_Posidonia_20.prj	20.12.2022. 14:32	PRJ File
1120_petricioli_sites_with_Posidonia_20.shp	20.12.2022. 14:32	SHP File
1120_petricioli_sites_with_Posidonia_20.shx	20.12.2022. 14:32	SHX File
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2019-STON_Marculeti_ronilacki_transekti_vrste_HTRS_46.shp	20.12.2022. 14:32	SHP File
2019-STON_Marculeti_ronilacki_transekti_vrste_HTRS_46.shx	20.12.2022. 14:32	SHX File
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BIUS_Scedro_island_Posidonia_4.prj	20.12.2022. 14:32	PRJ File
BIUS_Scedro_island_Posidonia_4.shp	20.12.2022. 14:32	SHP File
BIUS_Scedro_island_Posidonia_4.shx	20.12.2022. 14:32	SHX File
COAST_Vis_Rukavac_Posidonia_5.dbf	20.12.2022. 14:32	DBF File
COAST_Vis_Rukavac_Posidonia_5.prj	20.12.2022. 14:32	PRJ File
COAST_Vis_Rukavac_Posidonia_5.shp	20.12.2022. 14:32	SHP File
COAST_Vis_Rukavac_Posidonia_5.shx	20.12.2022. 14:32	SHX File
G.3.5.1. Biocenoza naselja vrste Posidonia oceanica_41.dbf	20.12.2022. 14:32	DBF File
G.3.5.1. Biocenoza naselja vrste Posidonia oceanica_41.prj	20.12.2022. 14:32	PRJ File
G.3.5.1. Biocenoza naselja vrste Posidonia oceanica_41.shp	20.12.2022. 14:32	SHP File
G.3.5.1. Biocenoza naselja vrste Posidonia oceanica_41.shx	20.12.2022. 14:32	SHX File
G.3.5.1. Biocenoza naselja vrste Posidonia oceanica_44.dbf	20.12.2022. 14:32	DBF File
G.3.5.1. Biocenoza naselja vrste Posidonia oceanica_44.prj	20.12.2022. 14:32	PRJ File
G.3.5.1. Biocenoza naselja vrste Posidonia oceanica_44.shp	20.12.2022. 14:32	SHP File
G.3.5.1. Biocenoza naselja vrste Posidonia oceanica_44.shx	20.12.2022. 14:32	SHX File
G.3.5.1.Biocenoza naselja vrste Posidonia oceanica_42.dbf	20.12.2022. 14:32	DBF File
G.3.5.1.Biocenoza naselja vrste Posidonia oceanica_42.prj	20.12.2022. 14:32	PRJ File
G.3.5.1.Biocenoza naselja vrste Posidonia oceanica_42.shp	20.12.2022. 14:32	SHP File
G.3.5.1.Biocenoza naselja vrste Posidonia oceanica_42.shx	20.12.2022. 14:32	SHX File
G.3.5.1.Biocenoza naselja vrste Posidonia oceanica_43.dbf	20.12.2022. 14:32	DBF File
G.3.5.1.Biocenoza naselja vrste Posidonia oceanica_43.prj	20.12.2022. 14:32	PRJ File
G.3.5.1.Biocenoza naselja vrste Posidonia oceanica_43.shp	20.12.2022. 14:32	SHP File
G.3.5.1.Biocenoza naselja vrste Posidonia oceanica_43.shx	20.12.2022. 14:32	SHX File
IPA_Marine_Natura2000_project_II_Posidonia_probable_sites_17.dbf	20.12.2022. 14:32	DBF File
IPA_Marine_Natura2000_project_II_Posidonia_probable_sites_17.prj	20.12.2022. 14:32	PRJ File
IPA_Marine_Natura2000_project_II_Posidonia_probable_sites_17.shp	20.12.2022. 14:32	SHP File
IPA_Marine_Natura2000_project_II_Posidonia_probable_sites_17.shx	20.12.2022. 14:32	SHX File
IPA_Marine_Natura2000_project_III_Posidonia_probable_sites_18.dbf	20.12.2022. 14:32	DBF File
IPA_Marine_Natura2000_project_III_Posidonia_probable_sites_18.prj	20.12.2022. 14:32	PRJ File
IPA_Marine_Natura2000_project_III_Posidonia_probable_sites_18.shp	20.12.2022. 14:32	SHP File
IPA_Marine_Natura2000_project_III_Posidonia_probable_sites_18.shx	20.12.2022. 14:32	SHX File
IPA_Marine_Natura2000_project_Posidonia_probable_sites_19.dbf	20.12.2022. 14:32	DBF File
IPA_Marine_Natura2000_project_Posidonia_probable_sites_19.prj	20.12.2022. 14:32	PRJ File
IPA_Marine_Natura2000_project_Posidonia_probable_sites_19.shp	20.12.2022. 14:32	SHP File

Hystorical data preparation

- Approximately 1000 shapefiles in different EPSG projections
- A lot of data with erroneous info on projection
- Projection parameters ususly defined as user defined
- Data not organised in database

10 M	5		5	-		~		·
	svi_crs	crs_Transverse_Merca	stari_crs_oznaka	EPSG	name_shp	xmin	xmax	ymin
1	#N/A	FALSE	#N/A	3907	batimetrija/lito_grad.shp	5382324,5	5791383,5	469
2	HTRS96 / Croatia TM	FALSE	HTRS96 / Croatia TM	3765	HGI_batimetrija/Kategorije_dubina/kategorije_dub	225182	667936,8	46098
3	HTRS96 / Croatia TM	FALSE	HTRS96 / Croatia TM	3765	HGI_batimetrija/Slojnice_5m/contour_linije_5.shp	225182	667965,3	46098
4	HTRS96 / Croatia TM	FALSE	HTRS96 / Croatia TM	3765	IOR_granulometrija_postaje/bogner_lokacije_uzor	226696,5	666909,4	45590
5	HTRS96 / Croatia TM	FALSE	HTRS96 / Croatia TM	3765	IOR_stanista_sediment_podaci/stanista_sediment_	226696,5	666909,4	45590
6	WGS 84	FALSE	WGS 84	4326	IOR_transekti_2/transekti.shp	13,3	17,9	
7	#N/A	FALSE	#N/A	3907	LITO_more/lito_mora.shp	5281447,5	5883772	443
8	HTRS96 / Croatia TM	FALSE	HTRS96 / Croatia TM	3765	Podloge_DON/more_adm_bez_otoka.shp	225169,3	667950,8	46098
9	HTRS96 / Croatia TM	FALSE	HTRS96 / Croatia TM	3765	podloge_MINGO/0_kartiranje/20000 Milja_do 2016	314876,4	556609,6	473
10	HTRS96 / Croatia TM	FALSE	HTRS96 / Croatia TM	3765	podloge_MINGO/0_kartiranje/20000 Milja_do 2016	315568,6	553587,7	47344
11	HTRS96 / Croatia TM	FALSE	HTRS96 / Croatia TM	3765	podloge_MINGO/0_kartiranje/20000 Milja_do 2016	315905,5	556324,9	47345
12	MGI / Balkans zone 5	FALSE	MGI / Balkans zone 5	3907	podloge_MINGO/0_kartiranje/Brijuni_Sunce/Brijur	5398555,2	5405866	49716
13	MGI / Balkans zone 5	FALSE	MGI / Balkans zone 5	3907	podloge_MINGO/0_kartiranje/Brijuni_Sunce/Brijur	5398943	5405649	49722
14	MGI / Balkans zone 5	FALSE	MGI / Balkans zone 5	3907	podloge_MINGO/0_kartiranje/Brijuni_Sunce/Brijur	5398456,6	5405683,8	49721
15	HTRS96 / Croatia TM	FALSE	HTRS96 / Croatia TM	3765	podloge_MINGO/0_kartiranje/Brijuni_Sunce/HTRS	279812,1	287033,7	49750
16	HTRS96 / Croatia TM	FALSE	HTRS96 / Croatia TM	3765	podloge_MINGO/0_kartiranje/Brijuni_Sunce/HTRS	280136,8	286816,8	49756
17	HTRS96 / Croatia TM	FALSE	HTRS96 / Croatia TM	3765	podloge_MINGO/0_kartiranje/Brijuni_Sunce/HTRS	279713,4	286846,7	49755
18	HTRS96 / Croatia TM	FALSE	HTRS96 / Croatia TM	3765	podloge_MINGO/0_kartiranje/CIM_N2K crvsta dna/	264787,7	282315,5	48915
19	HR_GK_5	FALSE	HR_GK_5	4326	podloge_MINGO/0_kartiranje/COAST/stanista_ruka	16,2	16,2	
20	HR_GK_5	FALSE	HR_GK_5	4326	podloge_MINGO/0_kartiranje/COAST/stanista_ruka	16,2	16,2	
21	HR_GK_5	FALSE	HR_GK_5	4326	podloge_MINGO/0_kartiranje/COAST/stanista_ruka	16,2	16,3	
22	HR_GK_5	FALSE	HR_GK_5	4326	podloge_MINGO/0_kartiranje/COAST/stanista_ruka	16,2	16,2	
23	HR_GK_5	FALSE	HR_GK_5	4326	podloge_MINGO/0_kartiranje/COAST/stanista_ruka	16,2	16,3	
24	HR_GK_5	FALSE	HR_GK_5	4326	podloge_MINGO/0_kartiranje/COAST/stanista_ruka	16,2	16,3	
25	HR_GK_5	FALSE	HR_GK_5	4326	podloge_MINGO/0_kartiranje/COAST/stanista_ruka	16,2	16,3	
26	HR_GK_5	FALSE	HR_GK_5	4326	podloge_MINGO/0_kartiranje/COAST/stanista_ruka	16,2	16,2	
27	HR_GK_5	FALSE	HR_GK_5	4326	podloge_MINGO/0_kartiranje/COAST/stanista_ruka	16,2	16,3	
28	HR_GK_5	FALSE	HR_GK_5	4326	podloge_MINGO/0_kartiranje/COAST/stanista_ruka	16,2	16,3	
29	HR_GK_5	FALSE	HR_GK_5	4326	podloge_MINGO/0_kartiranje/COAST/stanista_ruka	16,2	16,2	
30	HR_GK_5	FALSE	HR_GK_5	4326	podloge_MINGO/0_kartiranje/COAST/stanista_ruka	16,2	16,3	
31	HR_GK_5	FALSE	HR_GK_5	4326	podloge_MINGO/0_kartiranje/COAST/stanista_ruka	16,2	16,3	
32	HR_GK_5	FALSE	HR_GK_5	4326	podloge_MINGO/0_kartiranje/COAST/stanista_ruka	16,2	16,3	
33	HR_GK_5	FALSE	HR_GK_5	4326	podloge_MINGO/0_kartiranje/COAST/stanista_ruka	16,2	16,3	
24		CALCE	UD OK F	1000		16.0	10.0	

Read all shapefiles in one object

```
for ( i in 1:length(sve_dat_shp_l)){
  names(sve_dat_shp_l[[i]]) <- sve_dat_shp_l[[i]]
}
#read 950 shp files in one loop
for ( i in 1:length(sve_dat_shp_l)){
  sve_dat_shp_l[[i]] <- st_read(paste(getwd(),paste(sve_dat_shp[i], sep=""),sep="/" ))
}
save(sve_dat_shp_l, file="sve_dat_shp_l.RData")</pre>
```

```
setwd("C:\\Users\\aradovic\\Nextcloud\\Gis_data\\")
svi_folderi <- list.files("C:/Users/aradovic/Nextcloud/Gis_data", include.dirs = T, recursive=F)
svi_folderi_paths <- list.files("C:/Users/aradovic/Nextcloud/Gis_data", include.dirs = T, recursive=F, full.names=T)
sve_datoteke_paths <- list.files("C:/Users/aradovic/Nextcloud/Gis_data", include.dirs = T, recursive=T, full.names = T)
sve_datoteke <- data.frame(list.files("C:/Users/aradovic/Nextcloud/Gis_data", include.dirs = T, recursive=T))# encoding='utf-8',
names(sve_datoteke) <- c("ime")
sve_datoteke%fime <- Sys.time()
sve_datoteke%fime <- sys.time()
sve_datoteke%fime <- sys.time()
sve_datoteke%fime <- ifelse(sve_datoteke%ime %in% svi_folderi, "F", "D")
sve_dat_shp <- list.files("C:/Users/aradovic/Nextcloud/Gis_data", include.dirs = T, recursive=T, full.names = F, pattern=".shp")
##remove dat of type ".shp.xml"
sve_dat_shp <- sve_dat_shp[!grep1('.shp.xml', sve_dat_shp)]
sve_dat_shp <- sve_dat_shp[!grep1('.shp.ing)]
sve_dat_shp <- sve_dat_shp[!grep1('.shp.ing)]
sve_dat_shp <- sve_dat_shp[!grep1('.shp.ing)]
sve_dat_shp <- data_frame(sve_dat_shp)]
sve_dat_shp <- data_frame(sve_dat_shp)]
sve_dat_shp <- sve_dat_shp[!grep1('.shp.ing)]
sve_dat_shp <- data_frame(sve_dat_shp)]
sve_dat_shp <- data_frame(sve_dat_shp)]
sve_dat_shp <- data_frame(sve_dat_shp)]
sve_dat_shp <- data_frame(sve_dat_shp)]
sve_dat_shp <- sve_dat_shp[!grep1('.shp.ing)]
sve_dat_shp <- sve_dat_shp[!grep1('.shp.ing)]
sve_dat_shp <- sve_dat_shp[!grep1('.shp.ing)]
sve_dat_shp <- data_frame(sve_dat_shp)]
sve_dat_shp_</pre>
```

Set correct EPSG code / reproject

```
sve_dat_shp_l_3035 <- as.list(sve_dat_shp)##or list?
names(sve_dat_shp_l_3035) <- sve_dat_shp
#reproject 950 shp files in one loop epsg 3035
for ( i in 1:length(sve_dat_shp_l)){
    sve_dat_shp_l_3035[i] <- ifelse(is.na(st_crs(sve_dat_shp_l[i])), sve_dat_shp_l[i], st_transform(sve_dat_shp_l[i],
    3035))
}</pre>
```

save(sve_dat_shp_l_3035, file= "sve_dat_shp_l_3035.RData")

Save in kml format for expert validation

for (i in 1:nlevels(KMS_hhi_dxf\$Layer)){
layer_analiziram <- KMS_hhi_dxf[KMS_hhi_dxf\$Layer==levels(KMS_hhi_dxf\$Layer)[i],][1]
ime <- levels(KMS_hhi_dxf\$Layer)[i]
st_crs(layer_analiziram) <- 3767
layer_analiziram_ll <- st_transform(layer_analiziram, 4326)
st_write(layer_analiziram_ll, paste(ime, ".kml", sep=""))
}

01	PO_grids
	PO_kml(s)
	PO_shp_3035

Name	Date
😪 1120 petricioli_sites_with_Posidonia_20	20,12
2019-STON Marculeti ronilacki transekti vrste HTRS 46	20.12
SIUS Scedro island Posidonia 4	20.12
S COAST Vis Rukavac Posidonia 5	20.12
S.3.5.1. Biocenoza naselia vrste Posidonia oceanica 41	20.12
S G.3.5.1. Biocenoza naselia vrste Posidonia oceanica 44	20,12
G.3.5.1.Biocenoza naselja vrste Posidonia oceanica 42	20.12
G.3.5.1.Biocenoza naselja vrste Posidonia oceanica 43	20.12
IPA_Marine_Natura2000_project_II_Posidonia_probable_sites_17	20,12
IPA_Marine_Natura2000_project_III_Posidonia_probable_sites_18	20.12
IPA_Marine_Natura2000_project_Posidonia_probable_sites_19	20,12
Kruzic_Cladocora_research_sites_with_Posidonia_6	20,12
NPMIjet_Posidonia_7	20.12
PMR_Posidonia_2010_8	20,12
Se Posidonia oceanica_45	20.12
📚 posidonia_2	20,12
📚 posidonia_3	20,12
Se Posidonia_21	20.12
S posidonia_22	20.12
September 23 Posidonia_23	20.12
Separate Posidonia_24	20.12
September 25 September 25 September 25 September 26 Septe	20.12
Posidonia_26	20.12
Posidonia_28	20,12
September 29 Posidonia_29	20,12
S posidonia_30	20.12
Sposidonia_31	20.12
September 2015 Septem	20,12
September 23 Posidonia_33	20.12
Separate Posidonia_34	20,12
September 25 Posidonia_35	20.12
😪 Posidonia_36	20,12
S Posidonia_37	20,12
SPosidonia_38	20.12
S Posidonia_39	20,12
SPosidonia_40	20,12
Separationa_nova_27	20.12
Se Posidonia_oceanica_47	20.12
PP_PG_County_sites_with_Posidonia_9	20.12
SHAPEproject_Posidonia_10	20.12
SUNCE_Brac_island_II_Posidonia_11	20,12
SUNCE_Brac_island_Posidonia_12	20.12
🐨 SUNCE_Dugi_otok_Posidonia_13	20.12

- Cleaning, reprojecting data from diverse mapping projects
- Preparation of refferent grids at different scale (1000m, 250m, 50m, 10m) EPSG:3035
- Gridding hystorical data on referent grids

```
#create grid systems in R
st_make_grid(x,
    cellsize = c(diff(st_bbox(x)[c(1, 3)]), diff(st_bbox(x)[c(2, 4)]))/n,
    offset = st_bbox(x)[c("xmin", "ymin")],
    #n = c(10, 10),
    crs = if (missing(x)) NA_crs_ else st_crs(x),
    what = "polygons",
    square = TRUE,
    flat_topped = FALSE
)

##create ref system and grid
rsaga.get.modules("grid_tools", env=rsaga.env())
rsaga.get.usage("grid_tools", 23)
#st_bbox(bat_1_3035)
```

#1000
#1000
rsaga.geoprocessor("grid_tools", 23, param = list(GRID=paste("/application/earthuser/KMS_projekt/KMS_results/", "Grid_system_1000_3035.sdat", sep=""),
CELLSIZE=cellsize1, M_EXTENT= 1, ADJUST=0, XMIN=st_bbox(bat_1_3035)\$xmin, XMAX=st_bbox(bat_1_3035)\$xmax, YMIN=st_bbox(bat_1_3035)\$ymin, YMAX=st_bbox
(bat_1_3035)\$ymax))

#cellsize2-250m

rsaga.geoprocessor("grid_tools", 23, param = list(GRID=paste("/application/earthuser/KMS_projekt/KMS_results/", "Grid_system_250_3035.sdat", sep=""), CELLSIZ =cellsize2, M_EXTENT= 1, ADJUST=0, XMIN=st_bbox(bat_1_3035)\$xmin, XMAX=st_bbox(bat_1_3035)\$xmax, YMIN=st_bbox(bat_1_3035)\$ymin, YMAX=st_bbox(bat_1_3035)\$ymax

- Cleaning, reprojecting data from diverse mapping projects
- Preparation of refferent grids at different scale (1000m, 250m, 50m, 10m) EPSG:3035
- Gridding hystorical data on referent grids for (i in 1:length(E_NKS_sve_dat_shp_1_3035)){
 layer_analizinam <- E_NKS_sve_dat_shp_1_3035[[i]]</pre> ٠ http://www.setume.com/setume • ##write shp(s) setwd("/application/earthuser/KMS/KMS_results/NKS/F./F.1./F.1.2./shp_3035/")
 for (i in 1:length(E_NKS_sve_dat_shp_1_3035)){ layer_analiziram <- st_zm(layer_analiziram, drop=T, what='ZM')
 ime_2 <- strsplit(ime, "/")
 ime_3 <- paste(ime_2[[1]][length(ime_2[[1]])], i, sep="_")
 st_write(layer_analiziram, paste(ime_3, ".shp", sep=""))</pre> #gridding on ref grids
 library(RSAGA) #shapes for gridding NKS_shps <- list.files("/application/earthuser/KMS/KMS_results/NKS/F./F.1./F.1.2./shp_3035/", pattern="shp") rsaga.get.modules("grid_gridding", env=rsaga.env())
 rsaga.get.usage("grid_gridding", 0) for (i in 1:length(NKS_shps)){ ##should be removed shp_analiziram <- paste("/application/earthuser/KMS/KMS_results/NKS/F./F.1./F.1.2./shp_3035/", NKS_shps[i], sep="")</pre> ime <- gsub(".shp", "", NKS_shps[i])</pre> ime_sdat <- paste(paste("/application/earthuser/KMS/KMS_results/NKS/F./F.1./F.1.2./grids/50m/", ime, sep=""), "_50m.sdat", sep="")</pre> rsaga.geoprocessor("grid_gridding", 0 ,param = list(INPUT=shp_analiziram , OUTPUT=0, TARGET_DEFINITION=1, TARGET_TEMPLATE="/application/earthuser/KMS/ /KMS_results/Grid_system_50_3035.sdat", GRID= ime_sdat))

- Cleaning, reprojecting data from diverse mapping projects
- Preparation of refferent grids at different scale (1000m, 250m, 50m, 10m) EPSG:3035
- Gridding hystorical data on referent grids
- Gridding of species data
- Gridding of habitat data at level 2 (national classification)
- Organising in spatial database (PostGres/PostGIS)
- Everything prepared by R scripts
- Planned:
 - preparation of spectral signatures for each habitat class (yearly cicle)
 - Preparation of spectral signatures across polygons with Posedonia ceanica
 - Preparation of zonal statistics for the species for spectral signatures in different parts of Adriatic / season
 - Preparation of script for download EO data (Sentinel S1 and S2) images for years that matches (preferably ot to download I
- Grid 250 3035 bathimetry IDW.sdat Grid 250 3035 bathimetry IDW.sdat.aux Grid_250_3035_bathimetry_IDW.sgrd Grid system 10 3035.mgrd Grid_system_10_3035.prj Grid system 10 3035.sdat Grid system 10 3035.sgrd Grid system 50 3035.mgrd Grid system 50 3035.prj Grid system 50 3035.sdat Grid_system_50_3035.sgrd Grid system 250 3035.mgrd Grid_system_250_3035.prj Grid system 250 3035.sdat Grid system 250 3035.sgrd

• ...

Main acheivements – prepared data for supervised classification

- Gridded data on habitat types at 2nd level of national classification
- Gridded data on species (Posedonia oceanica) PO_grids
- Gridded data on bathimetry, sedimentology, geology....
- Everything prepared for pixel based classification on referent grid (10 and 50 m)

IS ≯ I	KMS_results > PO_grids			
^	Name	Date modified	Туре	Size
	<mark> </mark> 10m	21.12.2022. 16:38	File folder	
	50m	21.12.2022. 10:33	File folder	

s > P	O_grids > 10m
Nar	ne
	1120_petricioli_sites_with_Posidonia_20_10m.mgrd
0	1120_petricioli_sites_with_Posidonia_20_10m.prj
	1120_petricioli_sites_with_Posidonia_20_10m.sdat
10	1120_petricioli_sites_with_Posidonia_20_10m.sdat.aux
	1120_petricioli_sites_with_Posidonia_20_10m.sgrd
	2019-STON_Marculeti_ronilacki_transekti_vrste_HTRS_46_10m.mgrd
	2019-STON_Marculeti_ronilacki_transekti_vrste_HTRS_46_10m.prj
	2019-STON_Marculeti_ronilacki_transekti_vrste_HTRS_46_10m.sdat
	2019-STON_Marculeti_ronilacki_transekti_vrste_HTRS_46_10m.sdat.aux
	2019-STON_Marculeti_ronilacki_transekti_vrste_HTRS_46_10m.sgrd
	BIUS_Scedro_island_Posidonia_4_10m.mgrd
	BIUS_Scedro_island_Posidonia_4_10m.prj
	BIUS_Scedro_island_Posidonia_4_10m.sdat
	BIUS_Scedro_island_Posidonia_4_10m.sdat.aux
D	BIUS_Scedro_island_Posidonia_4_10m.sgrd
D	COAST_Vis_Rukavac_Posidonia_5_10m.mgrd
	COAST_Vis_Rukavac_Posidonia_5_10m.prj
	COAST_Vis_Rukavac_Posidonia_5_10m.sdat
B	COAST_Vis_Rukavac_Posidonia_5_10m.sdat.aux
	COAST_Vis_Rukavac_Posidonia_5_10m.sgrd
	G.3.5.1. Biocenoza naselja vrste Posidonia oceanica_44_10m.mgrd
	G.3.5.1. Biocenoza naselja vrste Posidonia oceanica_44_10m.prj
	G.3.5.1. Biocenoza naselja vrste Posidonia oceanica_44_10m.sdat
	G.3.5.1. Biocenoza naselja vrste Posidonia oceanica_44_10m.sdat.aux
	G.3.5.1. Biocenoza naselja vrste Posidonia oceanica_44_10m.sgrd
B	IPA_Marine_Natura2000_project_II_Posidonia_probable_sites_17_10m.mgrd
	IPA_Marine_Natura2000_project_II_Posidonia_probable_sites_17_10m.prj
	IPA_Marine_Natura2000_project_II_Posidonia_probable_sites_17_10m.sdat
	IPA_Marine_Natura2000_project_II_Posidonia_probable_sites_17_10m.sdat
	IPA_Marine_Natura2000_project_II_Posidonia_probable_sites_17_10m.sgrd
D	IPA_Marine_Natura2000_project_III_Posidonia_probable_sites_18_10m.mgrd
	IPA_Marine_Natura2000_project_III_Posidonia_probable_sites_18_10m.prj
	IPA_Marine_Natura2000_project_III_Posidonia_probable_sites_18_10m.sdat
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	IPA_Marine_Natura2000_project_III_Posidonia_probable_sites_18_10m.sgrd
	IPA_Marine_Natura2000_project_Posidonia_probable_sites_19_10m.mgrd
	IPA_Marine_Natura2000_project_Posidonia_probable_sites_19_10m.prj
D	IPA Marine Natura2000 project Posidonia probable sites 19.10m sdat

Main acheivements – prepared data for supervised classification

• Gridded data on species (Posedonia oceanica) PO_grids (with info on DEM (bathimetry)



 \rightarrow NKS \rightarrow F \rightarrow F.1 \rightarrow F.1.2 \rightarrow grids \rightarrow 50m

				Name
Main acheiven	nents – prepa	ared data for supervised o	classification	 1140_1_50m.mgrd 1140_1_50m.prj 1140_1_50m.sdat 1140_1_50m.sdat.aux
Gridded data on h	abitat types at 2nd l	evel of national classification – examp	ble on habitat type F.1.2.	1140_1_50m.sgrd 1140_2_50m.mgrd 1140_2_50m.prj
	pecies (Posedonia of	ceanica) PO_gnus		1140_2_50m.sdat
• Gridded data on b	athimetry, sediment	tology, geology		1140_2_50m.sdat.aux
• Eventhing proper	ad for nivel bacad al	assification on referent arid (10 and E) m)	1140_2_50m.sgrd
• Everything prepare	ed for pixel based ch	assilication on reference grid (10 and 50	J m)	1140_3_50m.mgrd
		s > NKS > F > F.1 > F.1.2		1140_3_50m.prj
r s NKS			> NKS > F > F.1 > F.1.2	1140_3_50m.sdat
s 7 IVC3		Name		1140_3_50m.sdat.aux
Name	F.I	🦲 grids	Name	1140_3_50m.sgrd
E F	F.2	📕 kml	10m	1140_8_50m.mgrd
G	F.3	🧯 shp_3035	30m	1140_8_50m.prj
l K	F.4	R E_NKS_F_1_2_sve_dat_shp_1_3035		1140_8_50m.sdat
	F.5	stanista_F_1_2		1140_8_50m.sdat.aux
				1140_8_50m.sgrd
				1140_16_50m.mgrd
				1140_16_50m.prj
				1140_16_50m.sdat
				1140_16_50m.sdat.aux
				1140_16_50m.sgrd
				1160_9_50m.mgrd
				1160_9_50m.prj
				1160_9_50m.sdat
				11C0 0 E0

Main acheivements

s > NKS	
Name	📕 F.1
ranne	📕 F.2
📕 F	📕 F.3
📕 G	F. 4
<mark>μ</mark> κ	📕 F.5

Main acheivements – prepared data for supervised classification

- Gridded data on habitat types at 2nd level of national classification example on habitat type F.1.2.
- Script for every habitat types based on Posedonia oceanica script (PO)