2nd Visibility Event – LIFE CROLIS Project

Appraisal of the Project Advisory Board

Geoff Smith
on behalf of the PAB

CROLIS Project Advisory Board

- **Gebhard Banko**
  - Federal Environment Agency, AT
- **Geoff Smith**
  - Specto Natura Ltd., UK
- **Mario Miler**
  - Faculty of Geodesy, University of Zagreb, HR
- **Peter Weiss**
  - Federal Environment Agency, AT

CROLIS requirements

- **Establish the first multi-scale and multi-purpose land monitoring system in Croatia**
  - Address European and national climate policy goals and the green transition in the LULUCF
  - Provide more precise management of natural carbon sinks
  - Support the planning and implementing GHG mitigation actions

Land monitoring

Build on existing datasets

- E.g., mapping & payment agencies, forestry departments

Obvious use case for Earth Observation (EO)

- Regular monitoring of extent and condition

‘Golden age’ of EO

- Last decade
- Copernicus Sentinels and Services
- Commercial satellite systems – finer spatial / temporal detail

Historical monitoring (pre-2016)

- Fragmented
- Less fit for purpose
- Missing all together

CORINE Land Cover

Pan – European land monitoring

- 25 ha MMU (changes 5 ha MMU)
- 44 land cover / land use classes
- 6 yearly update

Consistent specification, nomenclature & (methods)

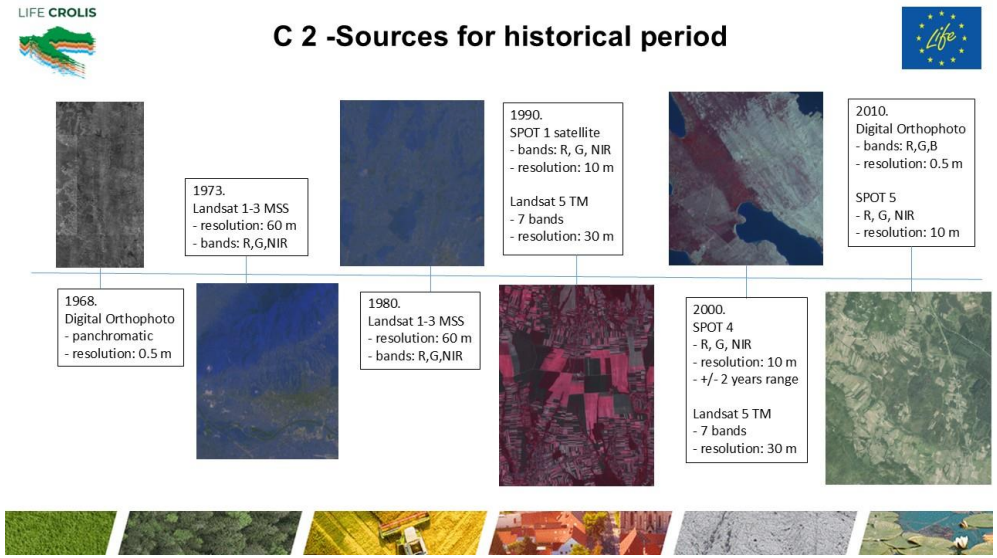
- Unique long time series
- Supports a range of mapping and accounting initiatives
- Encouraged the development of EAGLE and CLCplus

35-year anniversary

CROLIS results #1

Prototyping

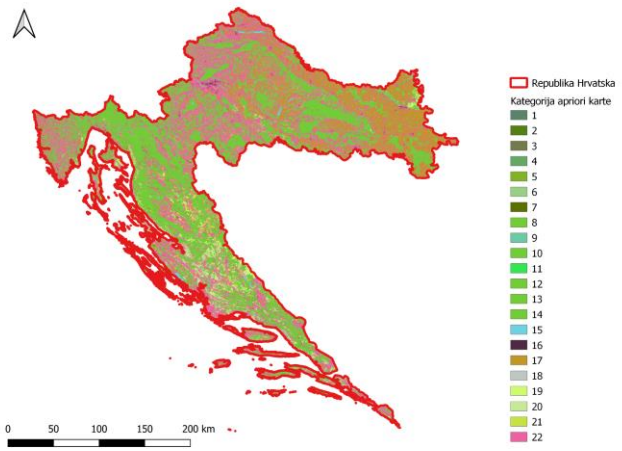
- Land use layer
- Land cover layers
- Sources of historic data



CROLIS results #2

Historic land cover changes

- Land cover status by year (1968, 1990, 2000, 2010, 2020) at sample points
- Land cover changes within each decade (1990-2000, 2000-2010, 2010-2020) at sample points
- Weighted estimates of land cover changes at the country level
- LULUCF reporting



Confusion Matrix and Statistics

	Reference						
Prediction	0	1	2	3	4	5	6
0	9982	3331	5127	6389	130	1944	91
1	929	3716	21	131	3	41	11
2	768	12	5639	106	1	33	0
3	235	263	43	981	0	11	7
4	157	33	14	62	394	4	1
5	83	0	0	1	0	173	0
6	111	6	4	14	0	10	300

Overall Statistics

Accuracy	0.5128
95% CI	(0.508, 0.5176)
No Information Rate	0.2969
P-Value [Acc > NIR]	< 2.2e-16
Kappa	0.3379
Mcnemar's Test P-Value	< 2.2e-16

Statistics by Class:

	Class: 0	Class: 1	Class: 2	Class: 3	Class: 4	Class: 5	Class: 6
Sensitivity	0.8139	0.50482	0.5198	0.12767	0.746212	0.078069	0.731707
Specificity	0.4143	0.96654	0.9698	0.98338	0.993355	0.997851	0.996455
Pos Pred Value	0.3698	0.76587	0.8597	0.63701	0.592481	0.673152	0.674157
Neg Pred Value	0.8406	0.90003	0.8501	0.83146	0.996703	0.950237	0.997308
Prevalence	0.2969	0.17818	0.2626	0.18600	0.012781	0.053641	0.009924
Detection Rate	0.2416	0.08995	0.1365	0.02375	0.009537	0.004188	0.007262
Detection Prevalence	0.6534	0.11745	0.1588	0.03728	0.016097	0.006221	0.010772
Balanced Accuracy	0.6141	0.73568	0.7448	0.55552	0.869784	0.537960	0.864081

Challenges

Data

- Designed for different purposes
- Changing specifications
- Temporally inconsistent

Organisational

- Working across ministries / departments
- Existing responsibilities and pressures

Methods

- Integrating existing information
- Adapting approaches
- Quantifying uncertainty

Summary

Foundations

- Taking on the paradigm shift of land characterization
- Identify bottle-necks (e.g., need for ARKOD+, identifying woodland outside CF).
- Acting as a test bed for other countries

Progress

- Putting components in place for CROLIS
- Prototyping key monitoring elements & products
- Developing historic land cover results

Summary

Future

- Build on the foundations and progress so far
- Learn from historical land cover work
- Continue to adopt EAGLE land charcterisation
- Operationalise CROLIS to deliver
  - Time series of information
  - Wall-to-wall coverage

- Long-term commitment, regulation
- Address other policy areas (e.g., NRR, SML, SEEA)

- May be one day celebrated 35 years of CROLIS?

Thank You