Produccion anual de 4 productos estandares:

- mapas de cobertura de suelo @ 1:100,000 y 1:20,000
- mapas de cambios de cobertura @ 1:100,000 y 1:20,000
- mapa: extension de tierras forestales
- mapa: extension de bosques y selvas

- processo automatizado, apoyado y revisado por interpretes expertos
- producción automatica de 8, 10, 14 y 36 clases

Imagenes de satélite disponible: 2011-2013, RapidEye

2-6 coberturas / año, temporada seca/lluvias

Nubes: 10%-20%

Angulos: 16-20° (80% con 16°, el restante con <20°)

Exactitud espacial (co-registro) 1-2 pixels (10m)

Exactitud cartografica (geo-registro) 25 m

imagenes:

2011:	3988+3988
2012:	3988+3988
2013:	3988+(3988)
2014:	3988+3988
2015:	>12000
2016:	12000-14000
2017-2018:	>24000

CONABIO

MAD-MEX: Cobertura del suelo

basado en datos de Landsat TM y ETM+ del año 2000

1) Bosques
- Bosque de Ayarín, Cedro
- Bosque Encino(-Pino), Matorral Subtropical
- Bosque de Pino (-Encino), Abies, Oyamel, Tascate, Matorral de Coníferas
- Matorral Submontano, Mezquital Tropical, Bosque Mezquital
- Chaparral
- Bosque Inducido, Cultivado, de Galería

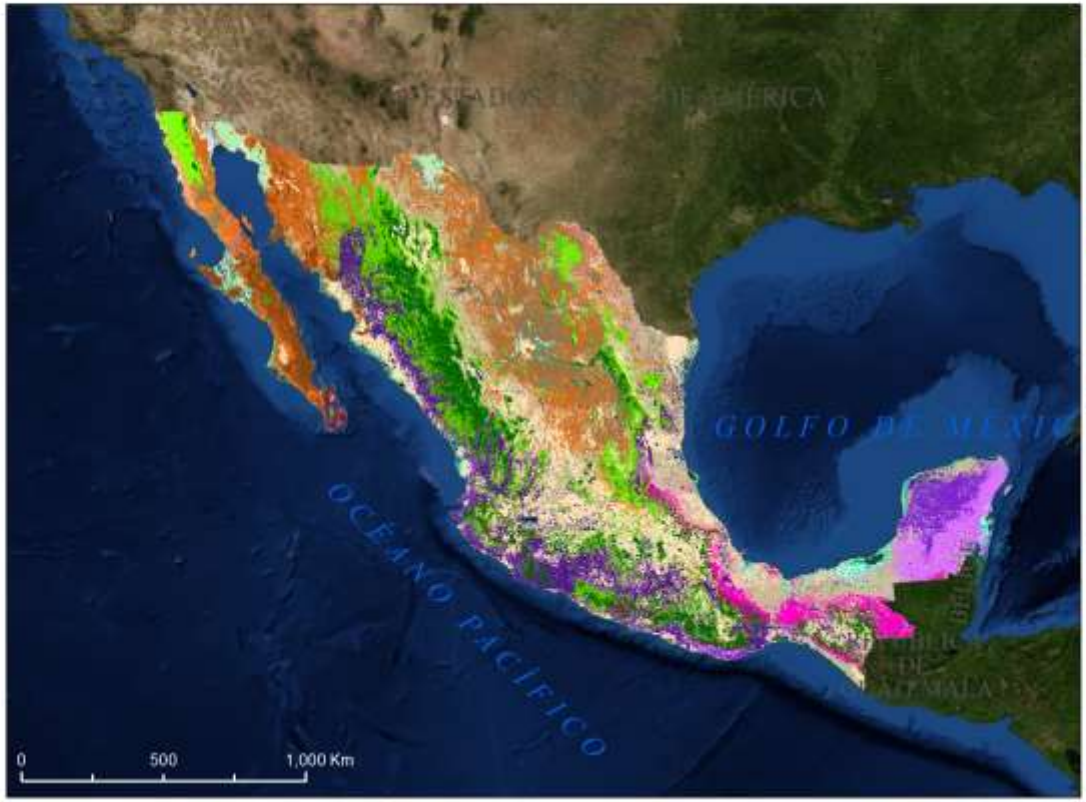
2) Selvas
- Bosque Mesófilo de Montaña, Selva Baja Perennifolio
- Selva Baja (Sub)Caducifolia, Espinosa (Caducifolia), Palmar Inducido
- Selva Baja y Mediana (Espinosa) Subperennifolia, Selva de Galería, Palmar Natural
- Selva Alta Subperennifolia
- Selva Alta y Mediana Perennifolia
- Selva Mediana (Sub) Caducifolia

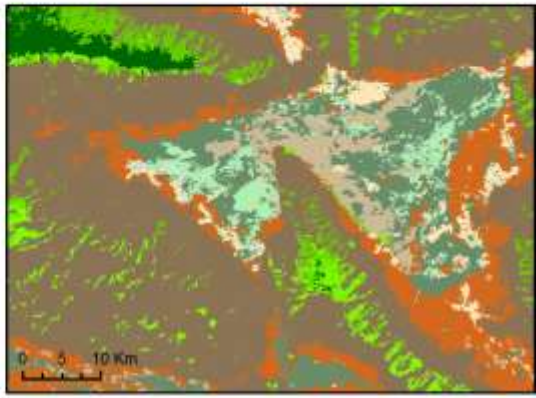
3) Humedales
- Tular
- Popal
- Manglar, Vegetación de Petén

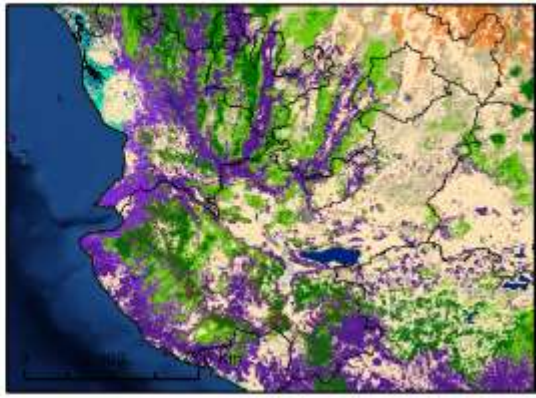
4) Matorrales
- Bosque de Mezquite, Matorral Desértico Microfilo, Mezquital Desértico, Vegetación de Galería
- Matorral Crasicaule
- Matorral Sarco-Crasicaule
- Matorral Sarco-Crasicaule de Neblina
- Matorral Sarcocaule
- Matorral Desértico Rosetofilo
- Matorral Espinosa Tamaulipeco
- Matorral Rosetofilo Costero

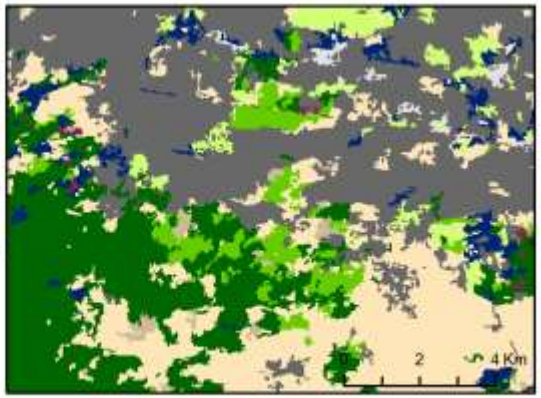
5) Otra vegetación
- Vegetación de Dunas Costeras
- Vegetación de Desiertos Arenosos
- Vegetación Halofila Hidrofila
- Vegetación Gipsofila Halofila Xerofila

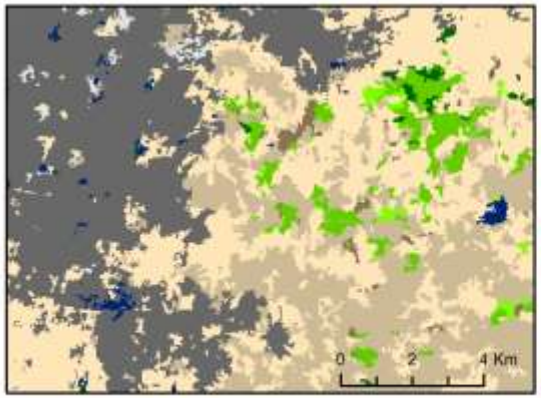
6) Otros
- Pastizal y Sabana
- Agricultura
- Agua
- Sin y Desprovisto de Vegetación
- Urbana

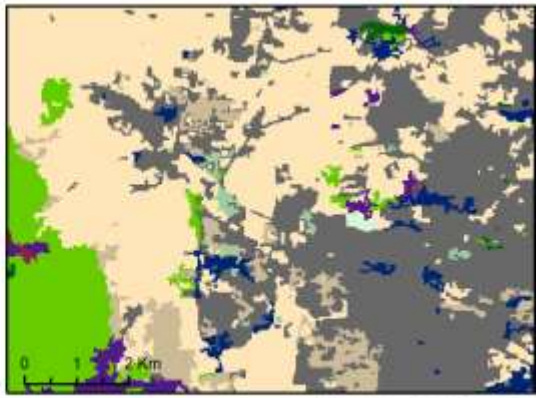








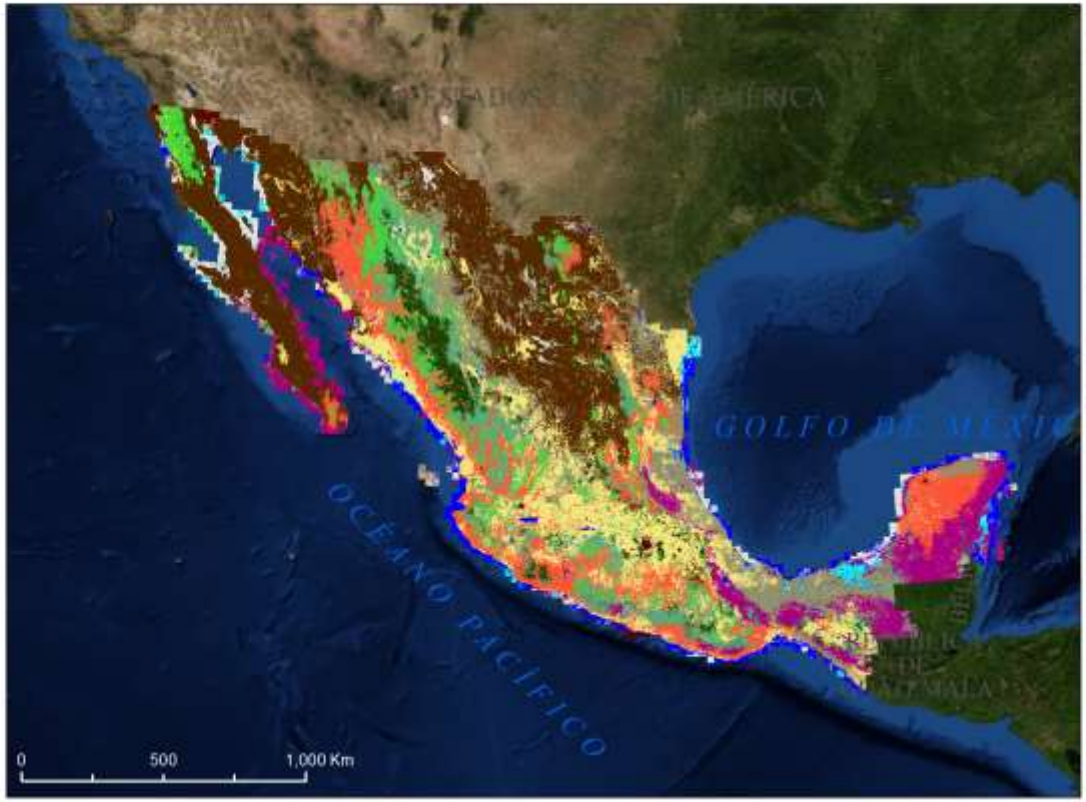


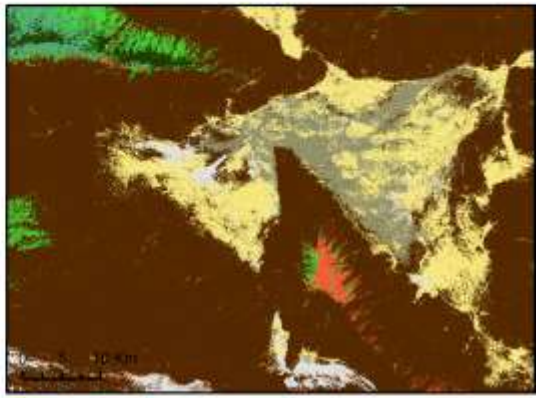


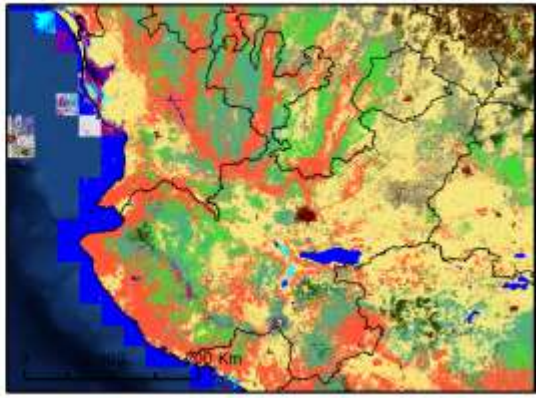
CONABIO. 2014. *Productos "cobertura del suelo" del proyecto REDD+ MRV, escala 1:100,000.*
Comisión Nacional para el Conocimiento y Uso de la Biodiversidad. México.

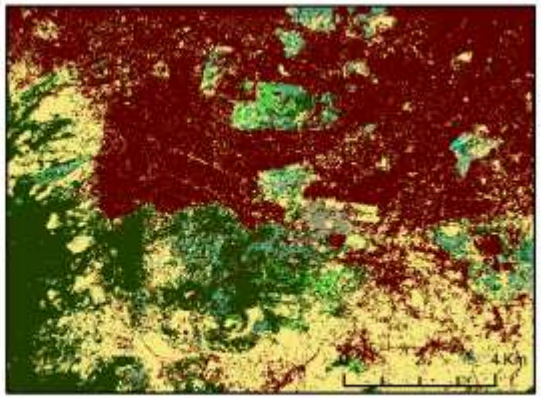
MAD-MEX: Cobertura del suelo
basado en datos de RapidEye del año 2011

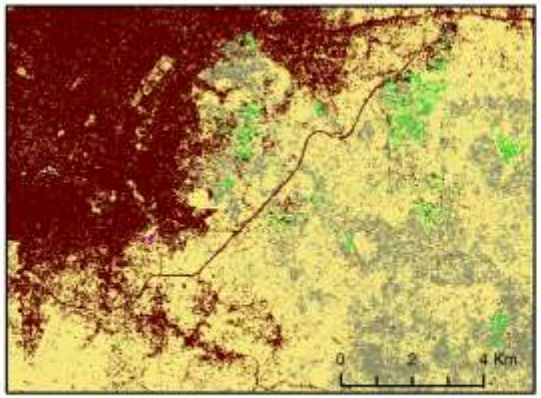
- AGRICULTURA
- BOSQUE DE CONIFERAS
- BOSQUE DE ENCINO
- BOSQUE DE ENCINO-PINO
- CUERPO DE AGUA
- MATORRAL XEROFILO
- PASTIZALES
- SELVAS HUMEDAS
- SELVAS SECAS
- SUELO DESNUDO
- URBANO Y CONSTRUIDO
- VEGETACION HIDROFILA

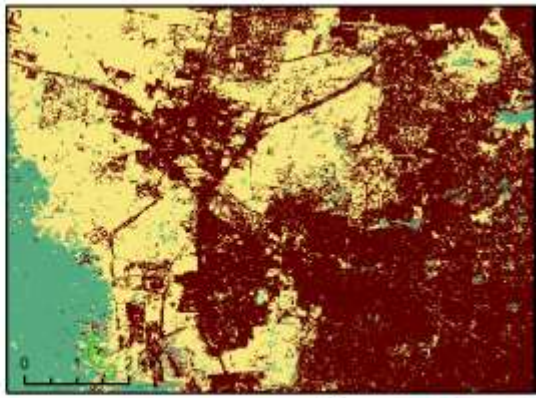












Sistema de Coordenadas Planas
Proyección:
Cónica Conforme de Lambert
Datum: WGS 1984

CONABIO. 2014. *Productos "cobertura del suelo" del proyecto REDD+ MRV, escala 1:20,000.*
Comisión Nacional para el Conocimiento y Uso de la Biodiversidad. México.

Imágenes satelitales

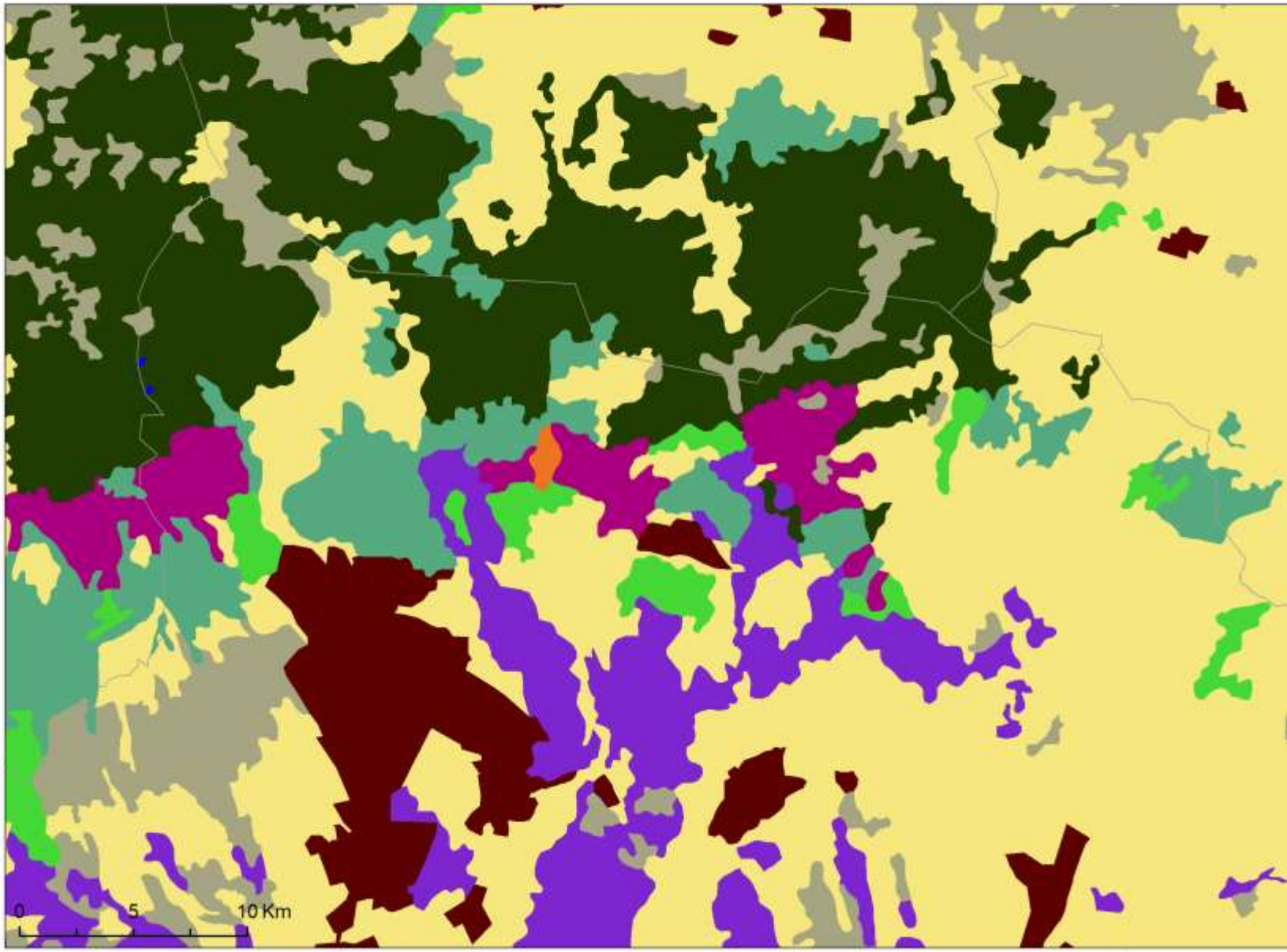
Sistema de Coordenadas Planas
Proyección:
Cónica Conforme de Lambert
Datum: WGS 1984

CONABIO

MAD-MEX: Cobertura del suelo

basado en datos de INEGI Uso del Suelo y Vegetación Serie III

- Agricultura
- Bosque de Coniferas
- Bosque de Encino
- Bosque de Encino-Pino
- Cuerpo de Agua
- Matorral xerófilo
- Pastizales
- Selvas humedas
- Selvas secas
- Suelo desnudo
- Urbano y Construido
- Vegetación hidrofila



Sistema de Coordenadas Planas
Proyección:
Cónica Conforme de Lambert
Datum: WGS 1984

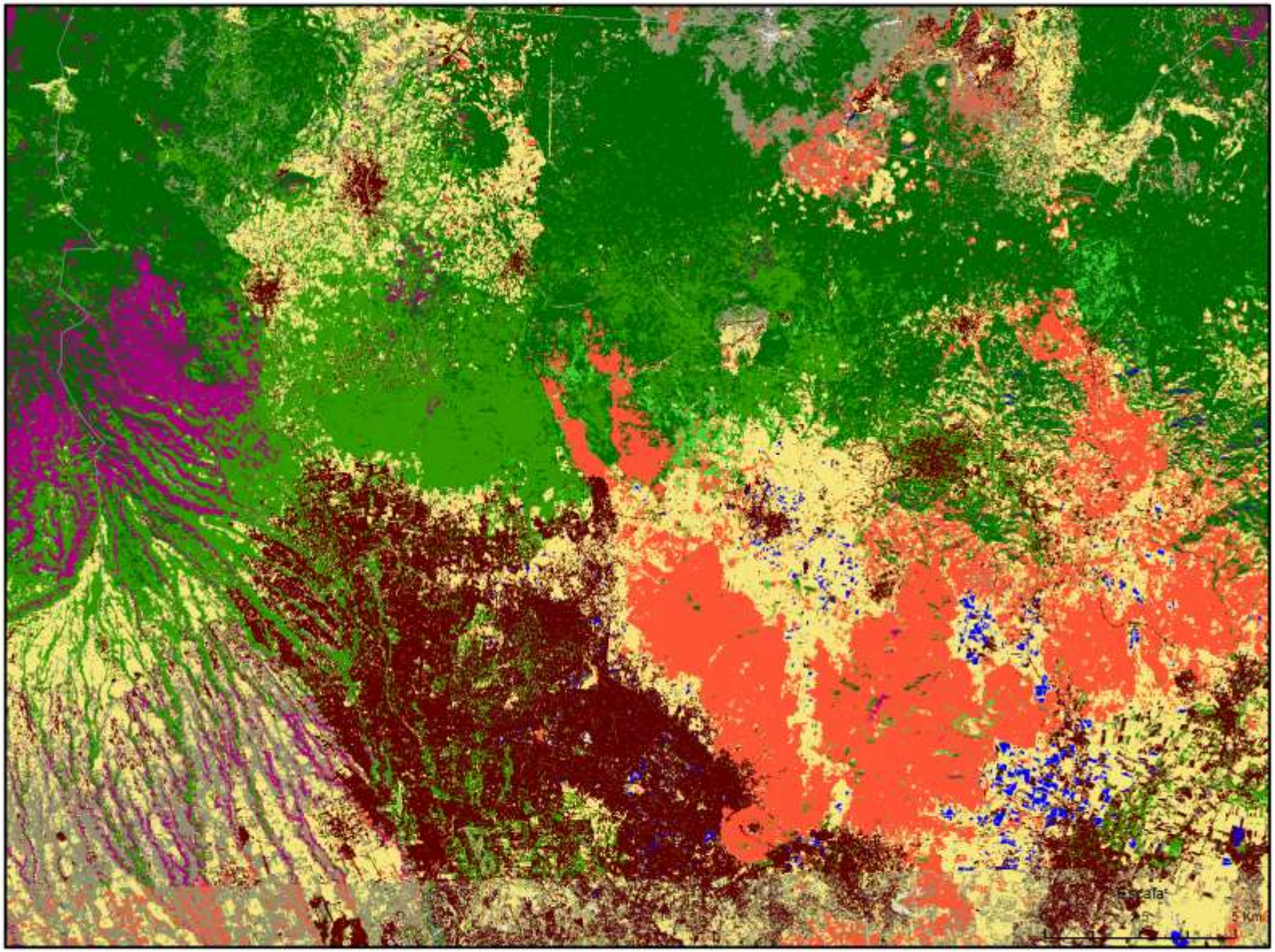
CONABIO. 2013. *Productos "cobertura del suelo" del proyecto REDD+ MRV, escala 1:250,000.*
Comisión Nacional para el Conocimiento y Uso de la Biodiversidad. México.

CONABIO

MAD-MEX: Cobertura del suelo

basado en datos de RapidEye del año 2011 con datos de entrenamiento manuales

- Bosque de Coniferas
- Bosque de Encino
- Bosque Mezclado
- Selvas Humedas y Subhumedas y Bosque Mesofilo
- Selvas Secas
- Matorral Xerofilo
- Pastizales
- Agricultura
- Agua
- Urbano y Construido
- Suelo Desnudo



Sistema de Coordenadas Planas
Proyección:
Cónica Conforme de Lambert
Datum: WGS 1984

CONABIO. 2014. *Productos "cobertura del suelo" del proyecto REDD+ MRV, escala 1:20,000.*
Comisión Nacional para el Conocimiento y Uso de la Biodiversidad. México.

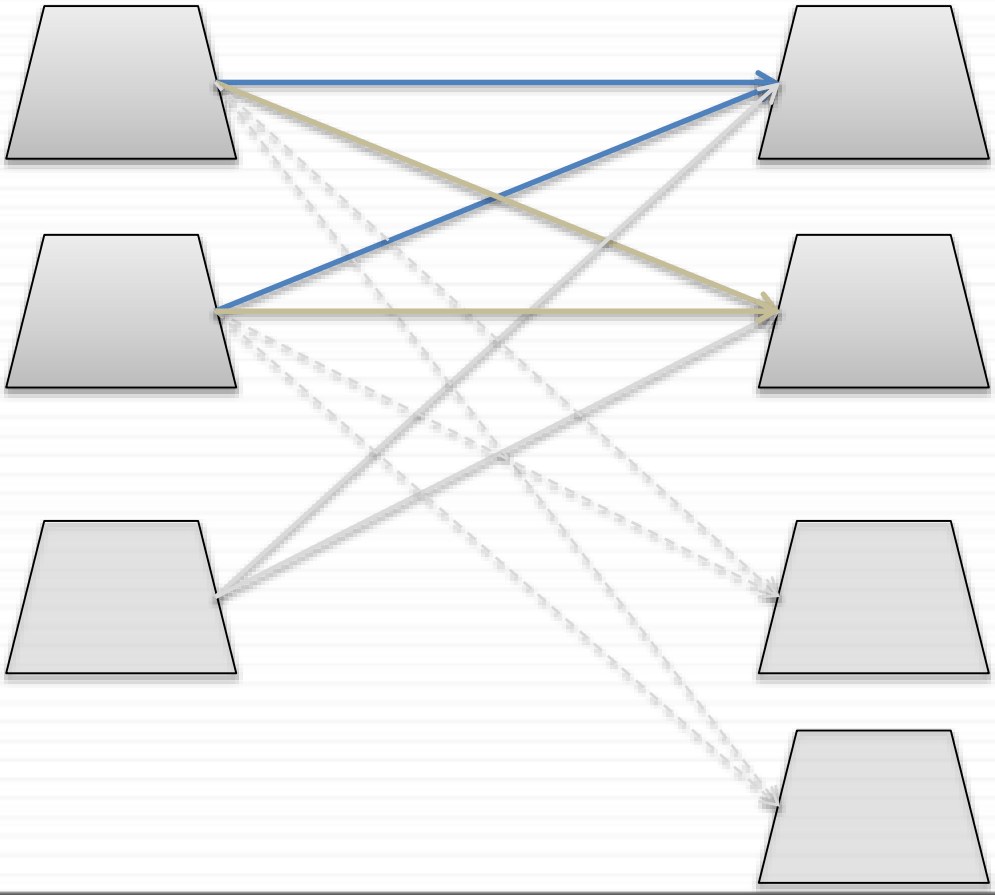
RapidEye/Landsat chips

Progress Chip Interpretation 05.05.2015:

Total Chips covering Mexico: 78008

Landsat: 78008Chips 1993, 2000, 2010
RapidEye: 7452 Chips 9% of total, 2011

Detección de cambios



MÉXICO
GOBIERNO DE LA REPÚBLICA

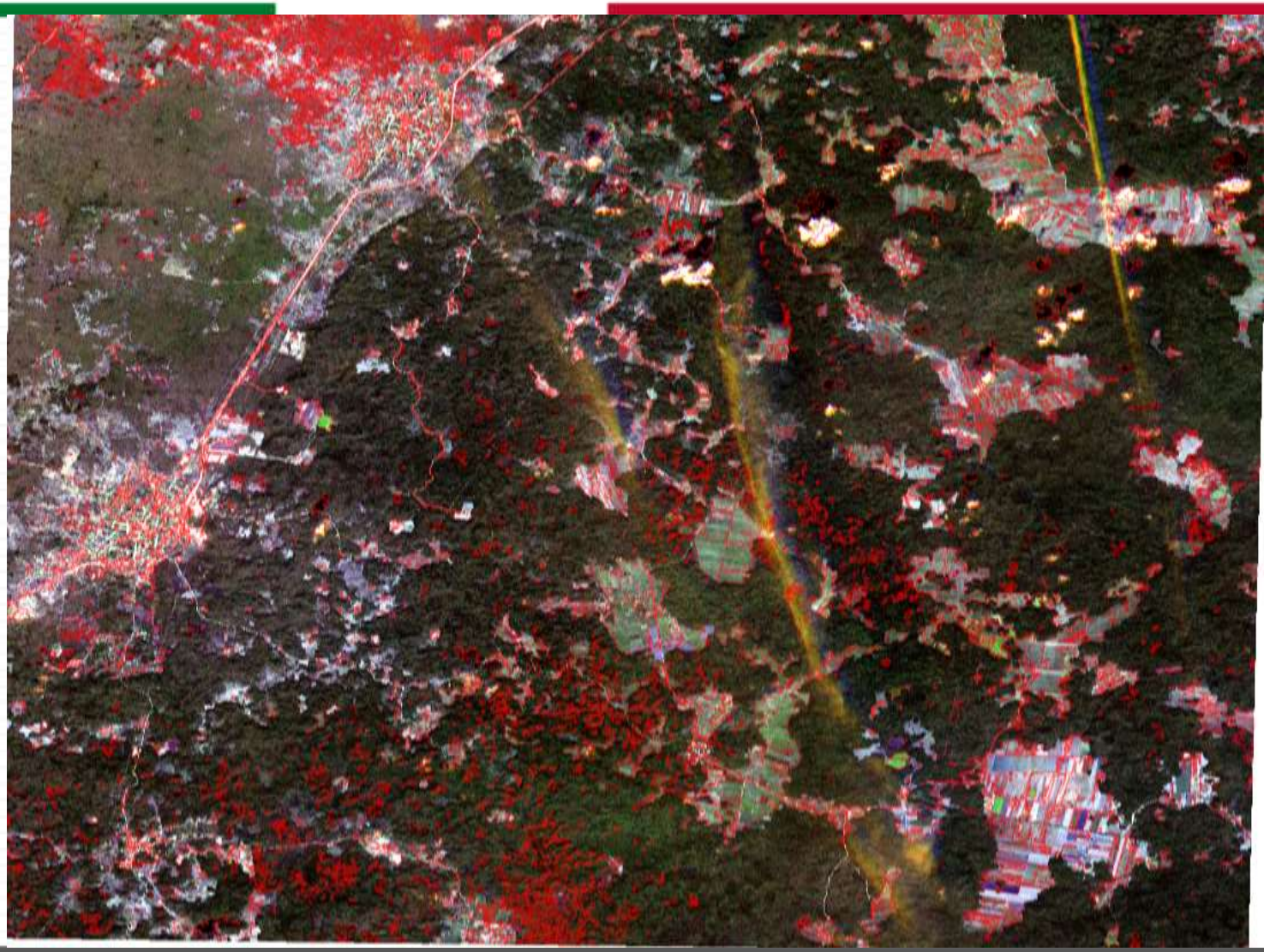
SEMARNAT
SECRETARÍA DE MEDIO AMBIENTE Y RECURSOS NATURALES

CONAFOR
COMISIÓN NACIONAL FORESTAL

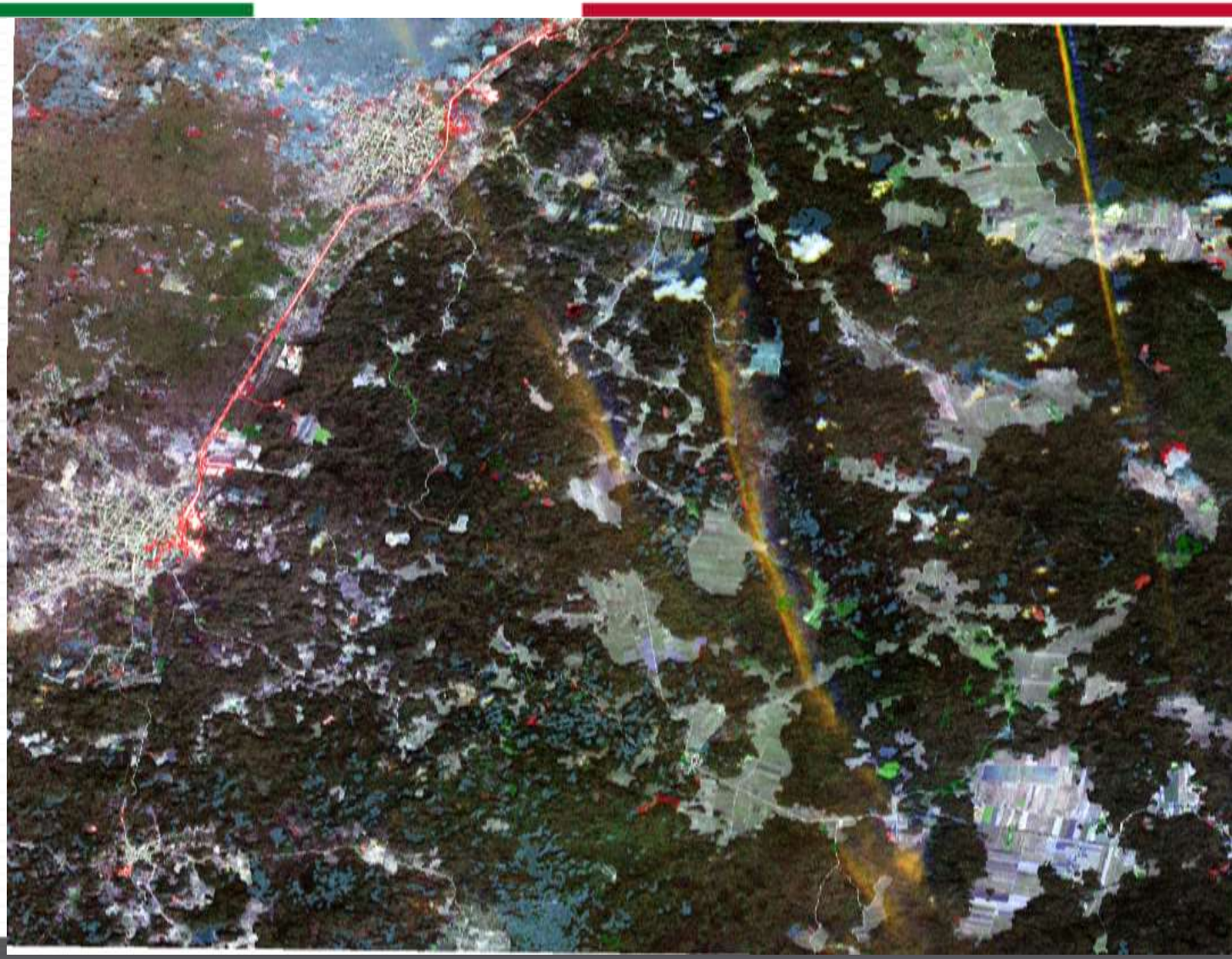
CONABIO

NORWEGIAN MINISTRY OF FOREIGN AFFAIRS

Change 2011 - 2012



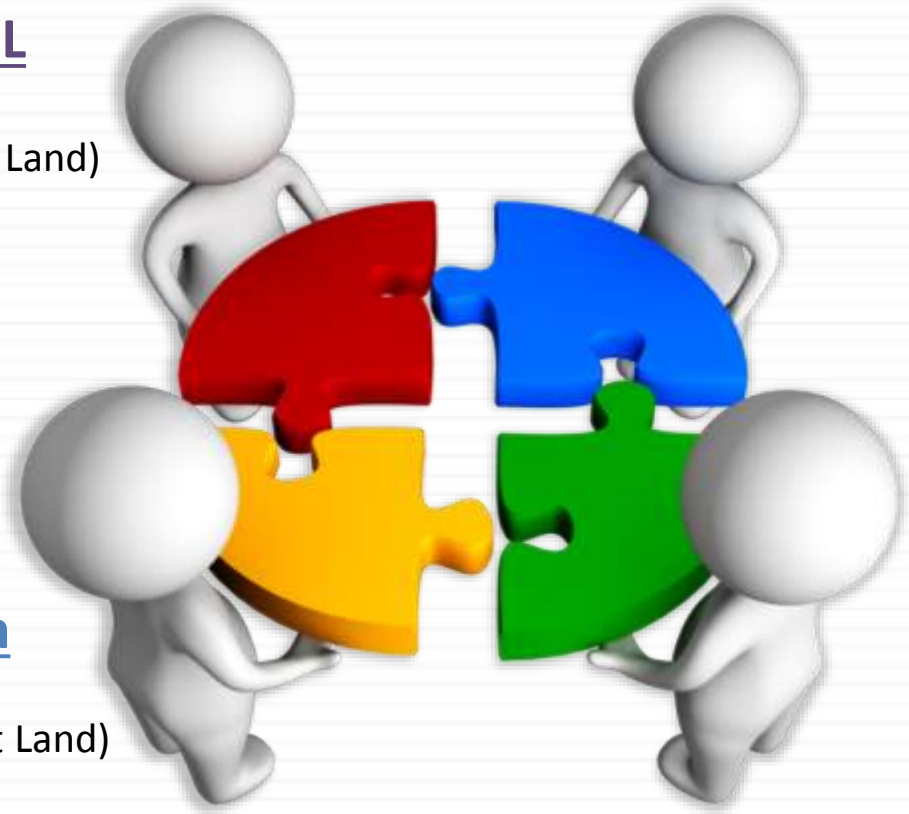
Change filtered by LC



Biannual Update Report and Reference Emission Level

Remaining FL

FL-FL (Forest Land remaining as Forest Land)



Degradation

FL-FLd (Forest Land remaining as Forest Land but degraded)

Reforestation

OU-FL (Other uses converted to Forest Land)

Recuperation

FLd-FL (Forest Land degraded converted to Forest Land)

Land cover 2000 validation

C1	Level 1	C2	Level 2	C3	Level 3	C4	Level 4
1	Forest	1	Temperate forest	1	Coniferous temperate forest	1	Spruce and cypressus forest
						3	Pine, juniperos and fir forest
						124	Pine-oak mixed forest and coniferous scrub
				2	Deciduous temperate forest	2	Oak and oak-pine mixed forest
						4	(Tropical) thorn forest, piedmont and subtropical scrub
						123	Induced and cultivated forest
						6	Chaparral
				100	Secondary temperate forest	100	Secondary temperate forest
		2	Tropical forest	3	Evergreen tropical forest	8	Cloud forest and low tropical evergreen forest
						10	Low and medium tropical seasonal evergreen forest, Tropical gallery forest and Palms
						11	Tall tropical seasonal evergreen forest
						12	Tall and medium tropical evergreen forest
						16	Mangrove and peten vegetation
				4	Deciduous tropical forest	9	Low tropical deciduous forest and induced palm
						13	Medium tropical deciduous forest
				200	Secondary tropical forest	200	Secondary tropical forest
2	Scrubland	3	Scrubland	5	Scrubland	5	Desertic microphyllous scrub, -thorn forest and gallery vegetation
						7	Pachycaulous scrub
						22	Tamaulipan thorn scrub
						17	Sarco-caulous scrub
						19	Sarco-pachycaulous scrub
						18	Mist's sarco-pachycaulous scrub
						23	Coastal rosetophyllous scrub
						21	Desertic rosetophyllous scrub
3	Agriculture	4	Agriculture	6	Agriculture	28	Rainfed, irrigated and moisture agriculture
4	Grassland	5	Grassland	7	Grassland	27	Grassland, meadow and savanna
5	Wetland	6	Wetland	8	Wetland	14	Cattail marsh
						15	Arrowroot marsh
6	Other vegetation	7	Other vegetation	9	Other vegetation	20	Coastal dune's vegetation
						24	Sand desert's vegetation
						25	Halophilous Hydrophilous vegetation
						26	Gypsophilous and halophilous vegetation
7	Unvegetated	8	Bare soil	10	Bare soil	30	Devoid and no vegetation
		9	Human settlements	11	Human settlements	31	Urband areas and human settlements

C1	Level 1 (82.50% OA)	C2	Level 2 (80.65% OA)	C3	Level 3 (75.06% OA)	C4	Level 4 (71.28% OA)	%Ai	ni
1	**87.14 ± 0.29 / 89.52 ± 0.30**	1	**84.86 ± 0.44 / 85.41 ± 0.45**	1	74.73 ± 0.96 / 73.47 ± 0.95	1	- / -		0
						3	**71.75 ± 1.42 / 69.48 ± 1.41**	3.20%	10443
						124	*61.31 ± 1.59 / 61.62 ± 1.58*	*3.41%*	*9776*
				2	74.21 ± 0.94 / 67.09 ± 0.85	2	**73.54 ± 1.23 / 61.48 ± 1.06**	5.50%	19187
						4	**72.75 ± 1.83 / 75.28 ± 1.87**	1.93%	5628
						123	*59.54 ± 15.66 / 69.58 ± 18.76*	*0.02%*	*93*
						6	65.61 ± 2.66 / 74.00 ± 2.88	0.93%	2700
				100	*45.03 ± 1.33 / 58.43 ± 1.63*	100	*45.03 ± 1.33 / 58.62 ± 1.62*	*5.07%*	*11123*
		2	**79.15 ± 0.55 / 83.78 ± 0.57**	3	**79.54 ± 1.13 / 79.22 ± 1.05**	8	*58.28 ± 3.72 / 63.00 ± 3.88*	*0.69%*	*1674*
						10	**82.97 ± 1.51 / 82.00 ± 1.34**	2.97%	6340
						11	**75.54 ± 7.00 / 88.63 ± 7.67**	0.08%	295
						12	**78.46 ± 2.49 / 75.91 ± 2.28**	1.23%	2941
						16	74.17 ± 4.12 / 70.62 ± 3.75	0.47%	1377
				4	70.12 ± 1.11 / 73.99 ± 1.09	9	69.58 ± 1.38 / 70.99 ± 1.32	4.59%	11124
						13	66.43 ± 2.03 / 75.77 ± 2.16	1.94%	4119
				200	*52.34 ± 1.30 / 58.10 ± 1.47*	200	*52.34 ± 1.30 / 57.97 ± 1.47*	*5.39%*	*13089*
2	**91.35 ± 0.40 / 88.36 ± 0.36**	3	**91.35 ± 0.40 / 88.54 ± 0.36**	5	**91.35 ± 0.40 / 88.55 ± 0.36**	5	**87.06 ± 0.74 / 77.41 ± 1.60**	12.26%	27340
						7	*63.11 ± 3.12 / 81.28 ± 3.82*	*0.80%*	*1307*
						22	**76.36 ± 1.85 / 79.50 ± 1.94**	1.75%	4373
						17	**75.84 ± 2.22 / 88.77 ± 2.46**	1.19%	2183
						19	**86.07 ± 1.62 / 82.46 ± 1.37**	2.72%	5687
						18	**84.64 ± 4.52 / 84.96 ± 4.36**	0.29%	557
						23	**89.55 ± 5.25 / 84.22 ± 4.08**	0.24%	542
						21	**83.23 ± 1.11 / 73.21 ± 3.40**	5.49%	12125
3	**75.22 ± 0.69 / 74.44 ± 0.65**	4	**75.22 ± 0.69 / 74.07 ± 0.65**	6	**75.22 ± 0.69 / 74.30 ± 0.65**	28	**75.22 ± 0.70 / 74.47 ± 0.65**	16.57%	39149
4	66.77 ± 0.74 / 68.63 ± 0.75	5	66.77 ± 0.74 / 68.43 ± 0.75	7	66.77 ± 0.74 / 68.56 ± 0.75	27	66.77 ± 0.75 / 68.95 ± 0.74	15.95%	37913
5	67.53 ± 3.25 / 74.98 ± 3.63	6	67.53 ± 3.29 / 74.19 ± 3.68	8	67.53 ± 3.29 / 74.00 ± 3.70	14	67.82 ± 3.55 / 72.74 ± 3.86	0.47%	1629
						15	*58.77 ± 9.38 / 82.34 ± 12.04*	*0.07%*	*148*
6	**86.29 ± 2.64 / 78.38 ± 1.67**	7	**86.29 ± 2.64 / 78.29 ± 1.67**	9	**86.29 ± 2.64 / 78.20 ± 1.67**	20	*59.26 ± 11.27 / 51.50 ± 10.24*	*0.08%*	*284*
						24	**89.83 ± 2.71 / 90.10 ± 1.93**	1.11%	1814
						25	74.08 ± 6.75 / 63.14 ± 6.03	0.20%	584
						26	*4.76 ± 32.81 / 11.76 ± 17.33*	*1.31%*	*1021*
7	71.22 ± 2.91 / 64.10 ± 2.69	8	66.91 ± 4.80 / 58.63 ± 4.71	10	66.91 ± 4.80 / 58.52 ± 4.71	30	66.91 ± 5.14 / 62.69 ± 4.28	0.51%	1238
		9	73.50 ± 3.67 / 66.85 ± 3.23	11	73.50 ± 3.67 / 66.89 ± 3.23	31	73.50 ± 3.70 / 66.82 ± 3.23	0.82%	1847
8	71.36 ± 3.02 / 67.21 ± 3.40	10	71.36 ± 3.06 / 66.85 ± 3.40	12	71.36 ± 3.06 / 66.74 ± 3.41	29	71.36 ± 2.95 / 70.09 ± 3.05	0.75%	2520

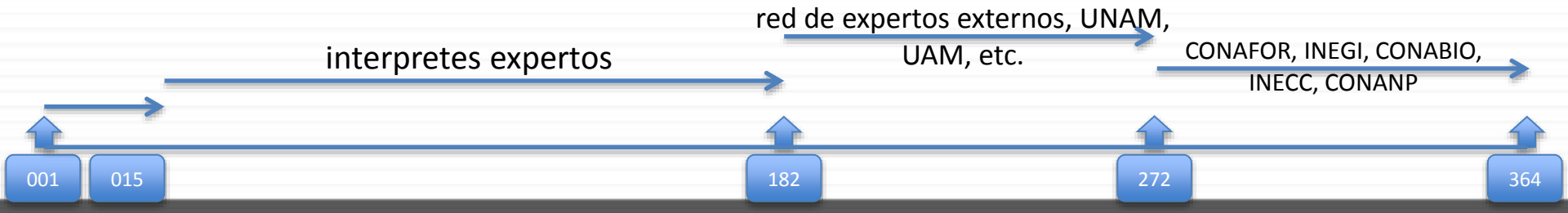
Calendario de producción de cartografía

Productos MAD-Mex producción automatica: LC / LCC 1:20,000 & 1:100,000 Estatus: no validado, preliminar 36/x clases 6 clases de cambio

Productos LUCC 1:20,000 & 1:100,000 16/35 clases, revisado, control de calidad, dirección y tipo de cambio, incertitumbre preliminar calculada

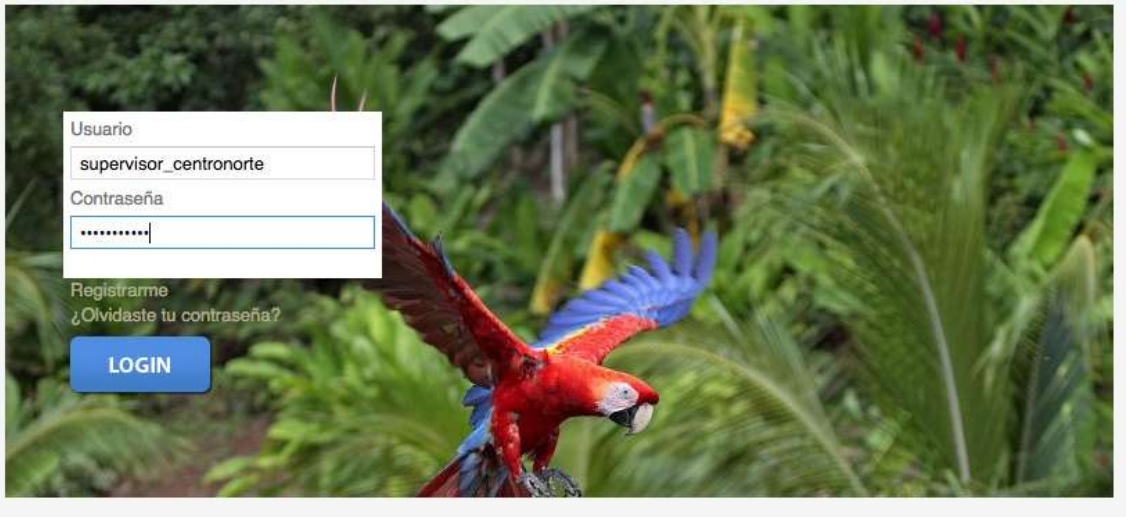
revisión por expertos externos (academia, etc.), comentarios

edición final, publicación



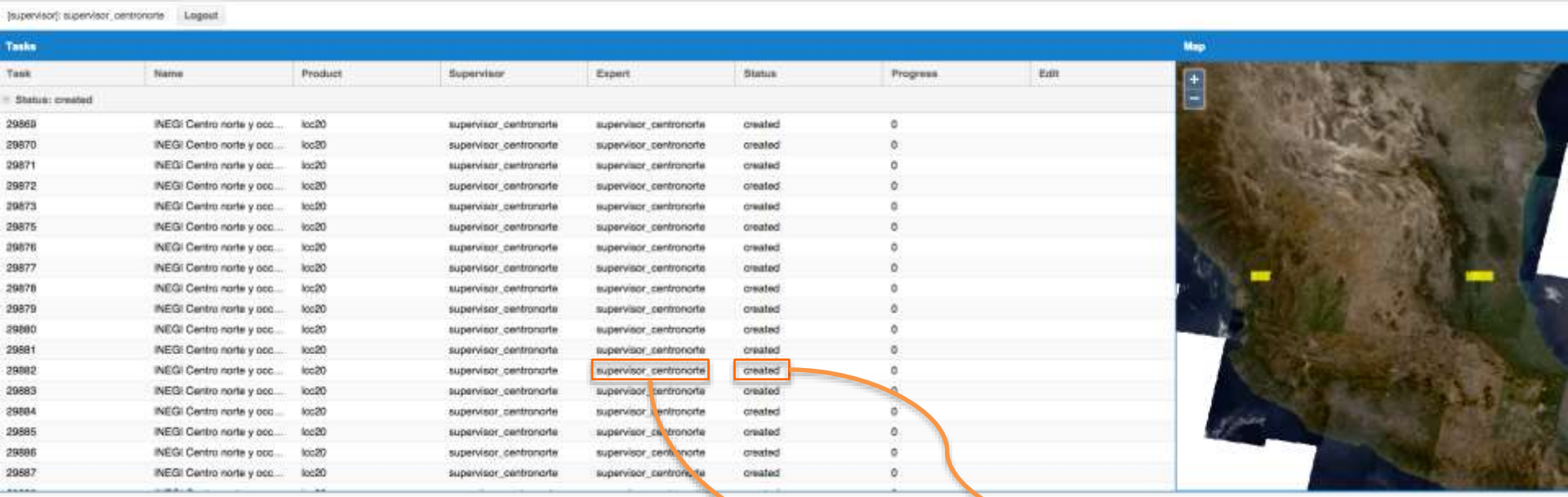
login interfaz

- Login central para todos los usuarios
- segun la identidad, se direge al usuario a su portal de tarea



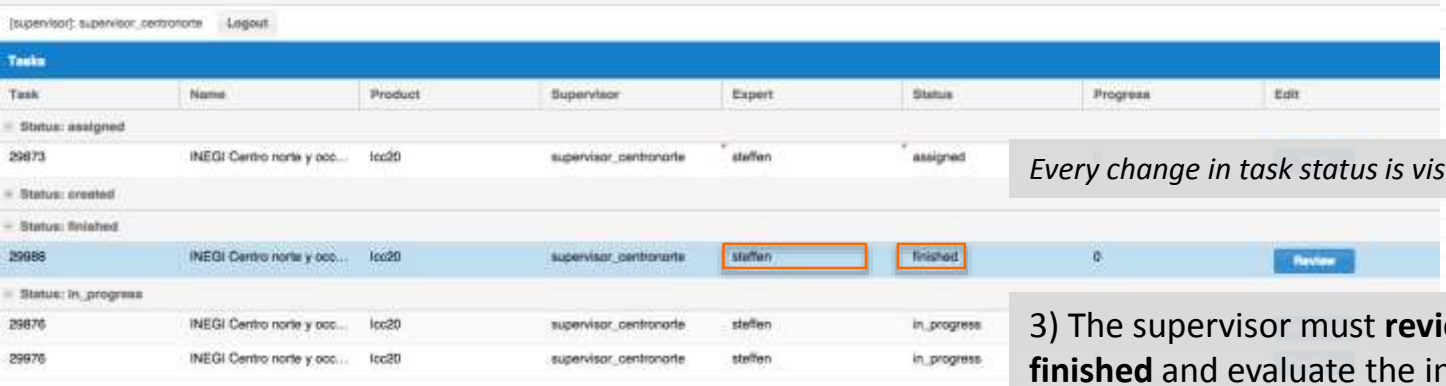
The users task p

1) Once tasks are created for specific region the responsible supervisor gets a list of maximal 100 tasks of status **created**



2) The supervisor must **define an expert** and **assign a the task** to him by double-clicking the respective field and selecting from the dropdown box

The users task portal from the **supervisors perspective**



Every change in task status is visible to the supervisor

3) The supervisor must **review** a task once it is **finished** and evaluate the interpretation results. He must then change the status to re-**assign** or to **approved** by double-clicking the respective field and selecting from the dropdown box

*When a task is finally **approved**, a new created task is automatically added to the list*

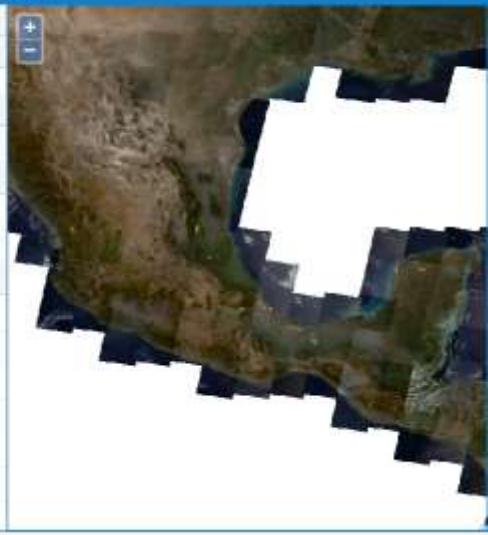
The interpreter sees all tasks assigned to him

(expert): steffen Logout

Tasks

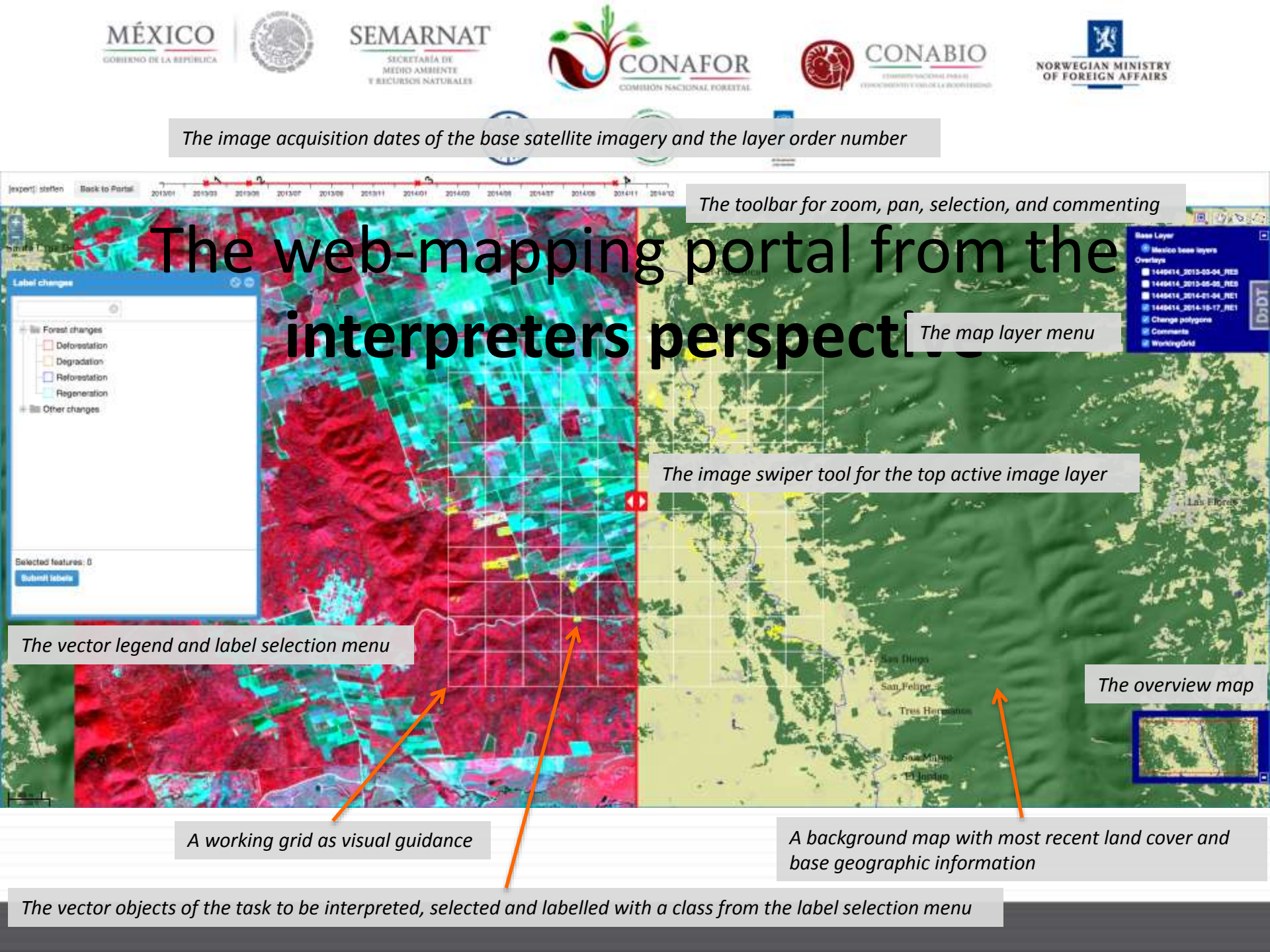
Task	Name	Product	Supervisor	Expert	Status	Progress	Edit
Status: approved							
29874	INEGI Centro norte y occ...	loc20	supervisor_centronorte	steffen	approved	0	
Status: assigned							
29873	INEGI Centro norte y occ...	loc20	supervisor_centronorte	steffen	assigned	0	Start
Status: finished							
26458	veracruz	loc20	supervisor_sureste	steffen	finished	0	Review
29886	INEGI Centro norte y occ...	loc20	supervisor_centronorte	steffen	finished	0	Review
Status: in_progress							
8860	tester merida	loc20	supervisor_sureste	steffen	in_progress	0	Continue
9619	tester merida	loc20	supervisor_sureste	steffen	in_progress	0	Continue
10085	tester merida	loc20	supervisor_sureste	steffen	in_progress	0	Continue
26239	veracruz	loc20	supervisor_sureste	steffen	in_progress	0	Continue
26609	veracruz	loc20	supervisor_sureste	steffen	in_progress	0	Continue
26766	Prueba DF a	loc20	supervisor_sureste	steffen	in_progress	0	Continue
29876	INEGI Centro norte y occ...	loc20	supervisor_centronorte	steffen	in_progress	0	Continue

Map



Depending on the task status he can either **start**, **review** or **continue** the interpretation process. This will forward him to the web-mapping portal for the given task

Once the interpretation of a given task is **finished** the interpreter **must change the status** by double-clicking the status field and selecting **finished** from the dropdown list


The image acquisition dates of the base satellite imagery and the layer order number
The toolbar for zoom, pan, selection, and commenting
The web-mapping portal from the interpreters perspective
The map layer menu
The image swiper tool for the top active image layer
The vector legend and label selection menu
The overview map
A working grid as visual guidance
A background map with most recent land cover and base geographic information
The vector objects of the task to be interpreted, selected and labelled with a class from the label selection menu

- Proximos Pasos:
  - generación de datos para entrenar / validar escala 1:20,000:
    - RapidEye, 2014:
      - 78008 Chips RapidEye: 25,000,000 de objetos
    - tiempo estimado: 10 obj./min. 8h/día = 5212 dias
      - 30 interpretes: 173 dias
      - 50 interpretes: 104 dias
    - costo estimado: 200,000/año/interprete:
      - 30 interpretes: 2,843,835 MXN
      - 50 interpretes: 2,849,315 MXN

- Proximos Pasos:
  - procesamiento / post-procesamiento:
    - Implementación en la nube: terminado (10.05.2015)
      - Amazon: 5440 USD / mes
      - Google: 5660 USD / mes
      - Rackspace: 13.100 USD/mes
    - Cliente de Interpretación / control de calidad: terminado
  - generación de datos para validar deteccion de cambios:
    - Landsat: 2000 – 2010: en progreso, terminara: 06-2015
    - RapidEye: 2013-2014: estatus de propuesta