

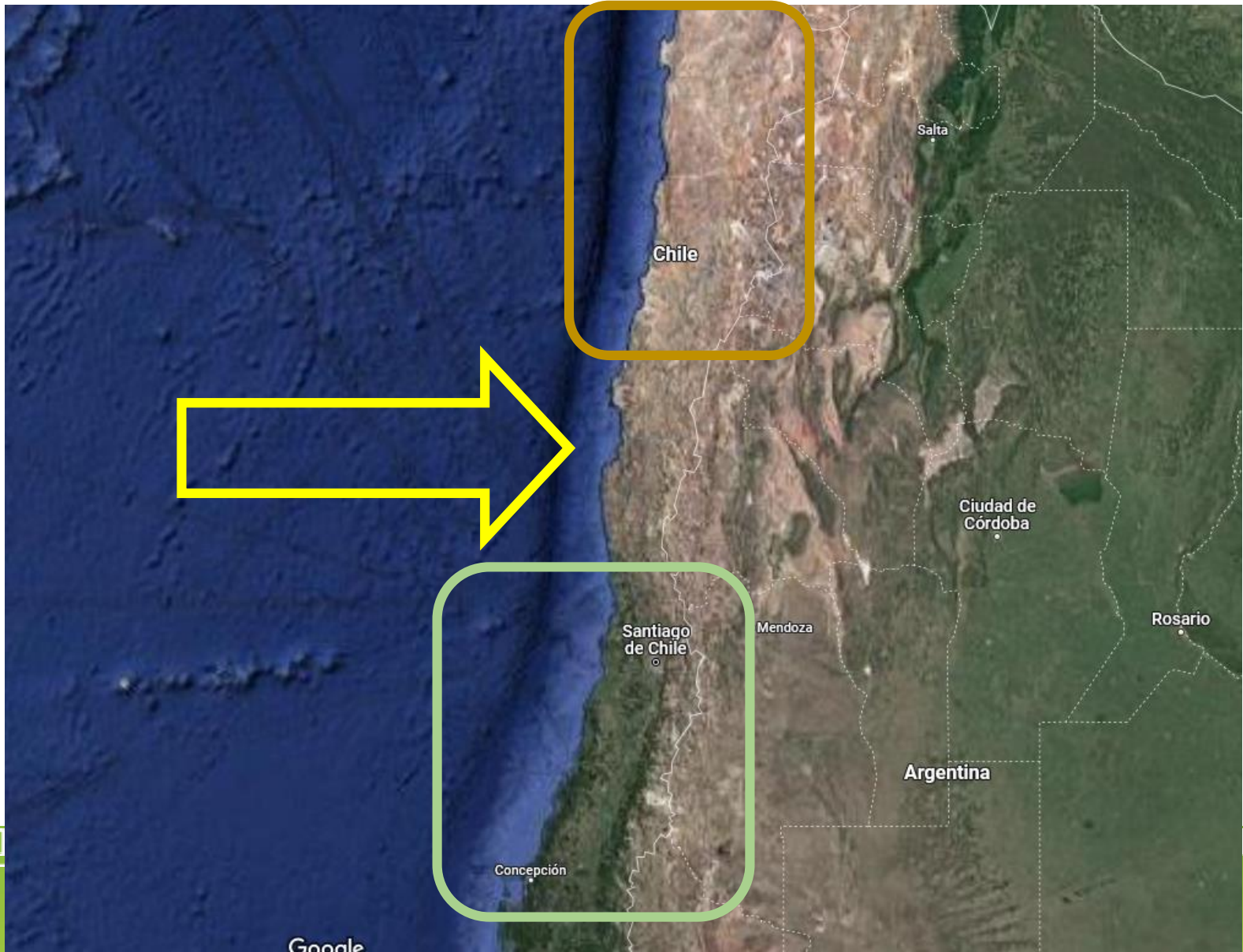


Área I+D: CEAZAmet Proyecto IDEA 2022-2024 ID22I10074

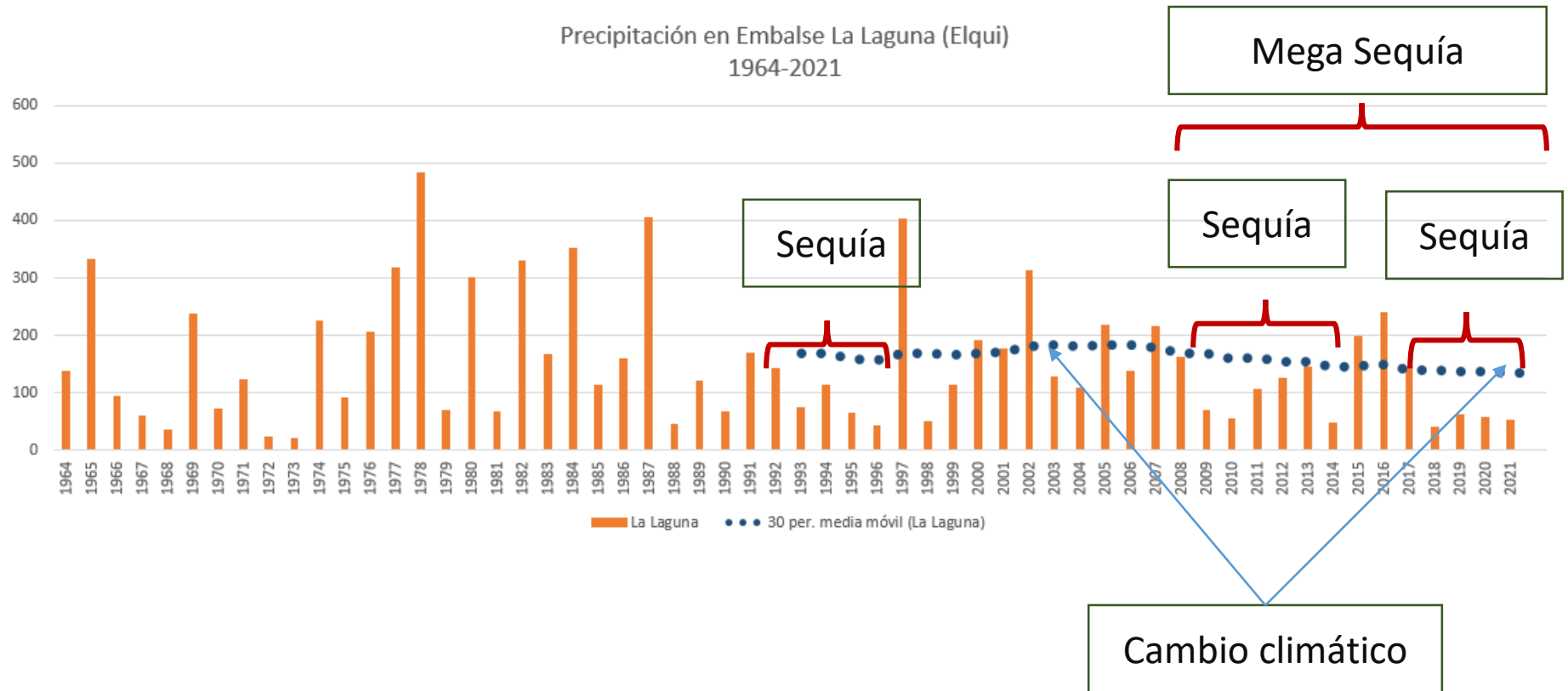
Cristian Orrego
Ing. Computación
Coordinador grupo CEAZAmet

Octubre 2022

Contexto: Zona de transición



Contexto: Sequías y cambio climático



Impactos



Al fondo el embalse La Paloma, abajo de huertos secos, 'toconados' o arrancados de palto, cítricos, uva de mesa, etc.



Rol del CEAZA-Met

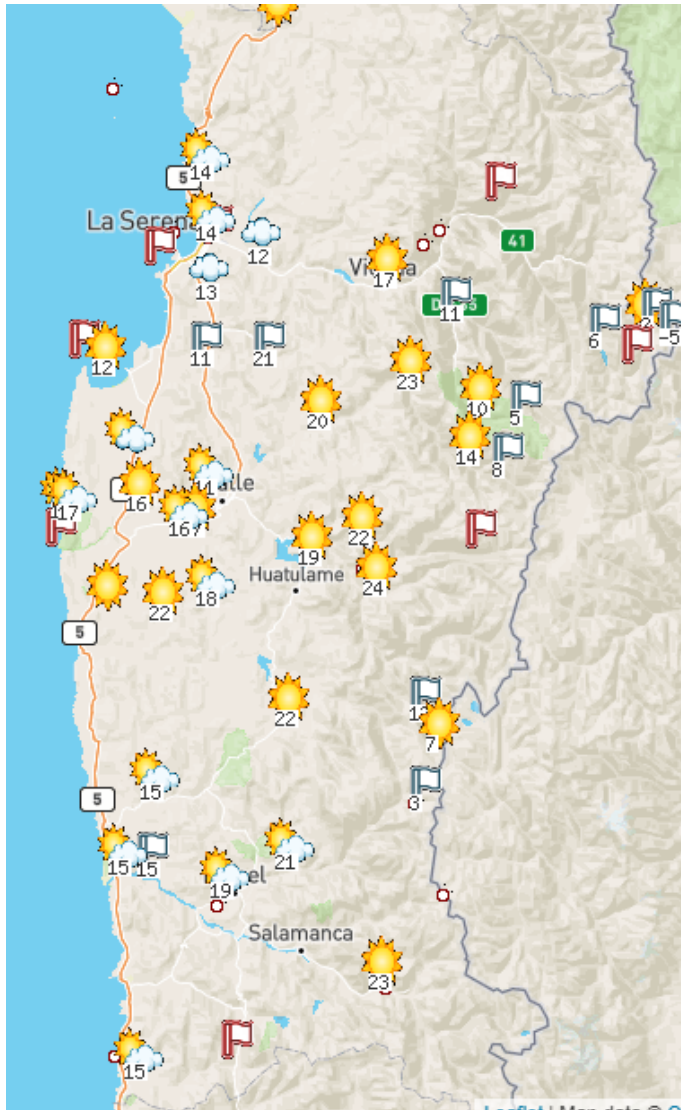


Aunque todavía insuficiente, hay muchos datos e información, solo que hay pocos agentes operativos involucrados permanentemente en el ciclo de gestión de la información y apoyo a la toma de decisiones.

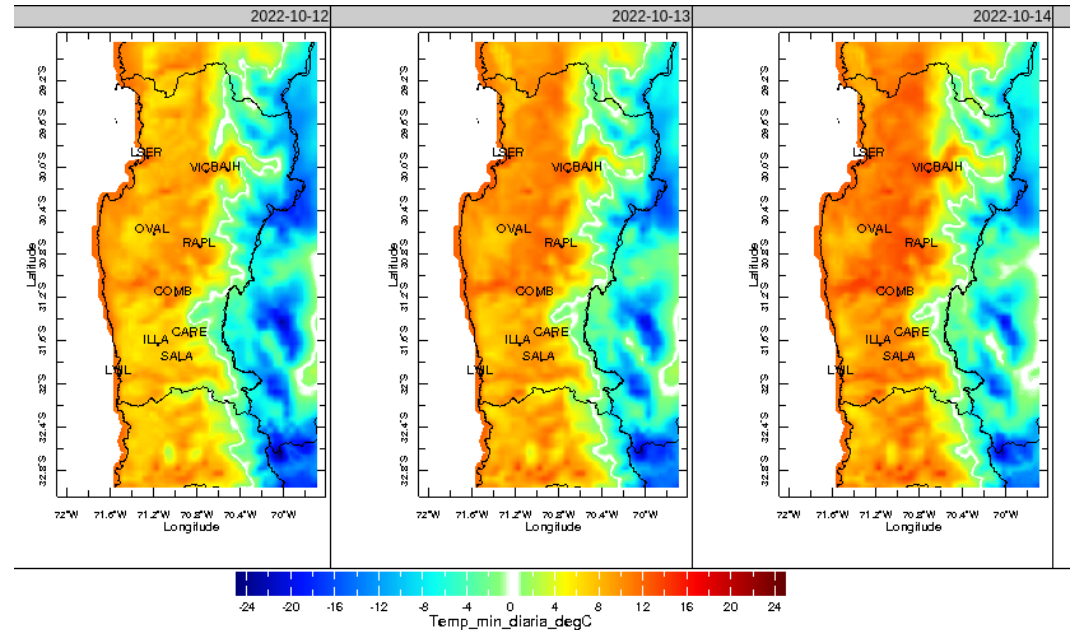
El ecosistema de la información



CEAZAmet: monitoreo/pronóstico/modelos



La Serena	Ovalle	Combarbalá	Illapel
AHORA 13°C 77% 0.7km/h	AHORA 12.6°C 74% 4.2km/h	AHORA 17.4°C 23% 3.9km/h	AHORA 12.8°C 76% 3.1km/h
Hoy 10° - 17°	Hoy 5° - 25°	Hoy 11° - 23°	Hoy 6° - 22°
Mañana 10° - 20°	Mañana 7° - 27°	Mañana 12° - 25°	Mañana 8° - 22°
Jueves 10° - 18°	Jueves 8° - 25°	Jueves 12° - 26°	Jueves 11° - 22°
Viernes 12° - 17°	Viernes 10° - 28°	Viernes 14° - 28°	Viernes 13° - 24°
www.ceazamet.cl	www.ceazamet.cl	www.ceazamet.cl	www.ceazamet.cl



CEAZAmet y monitoreo en altura

Esto es difícil y caro!!
Pero necesitamos mas



Área de I+D de tecnología

Tiene como fin aportar al monitoreo nival y de la agricultura creando tecnología de telemetría



Sistemas de telemetría



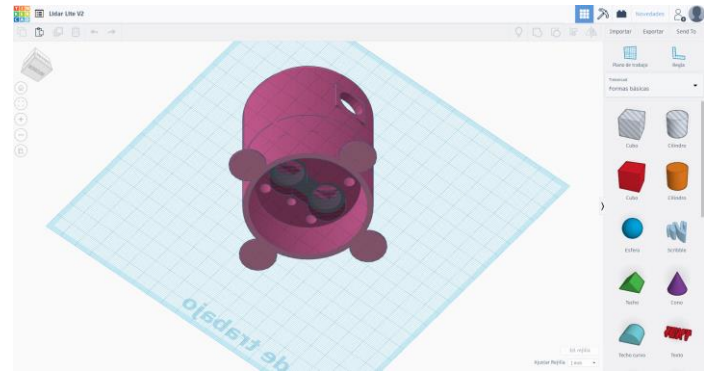
Etapla 1:

Factibilidad

(2015-2018)



Prototipos (2015-2018)



Es factible?

Prototipo 3: Pruebas terreno



Si!!!!

Etapla 2:

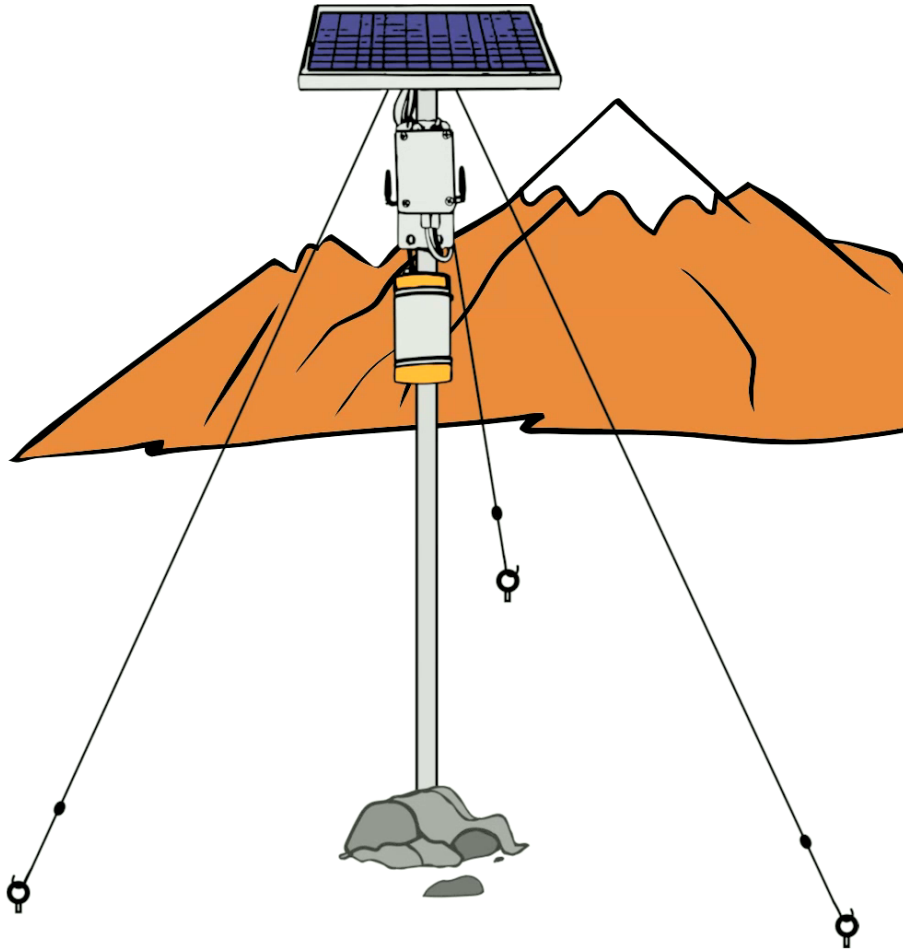
Desarrollo

electrónico

(ANID-IDEA 2020)



2020-2021: Nodos de altura (V4)



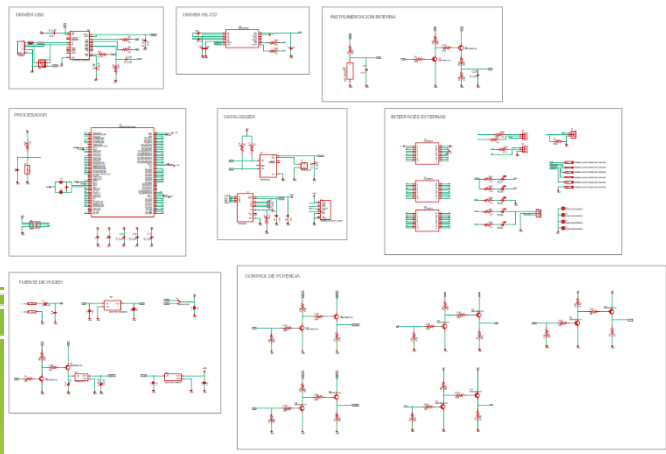
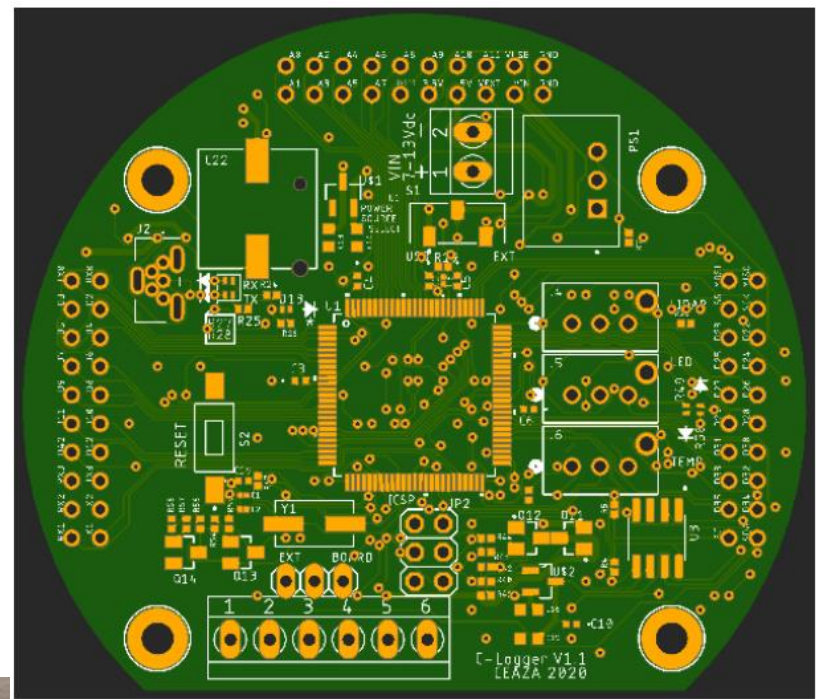
Bajo costo

Bajo peso

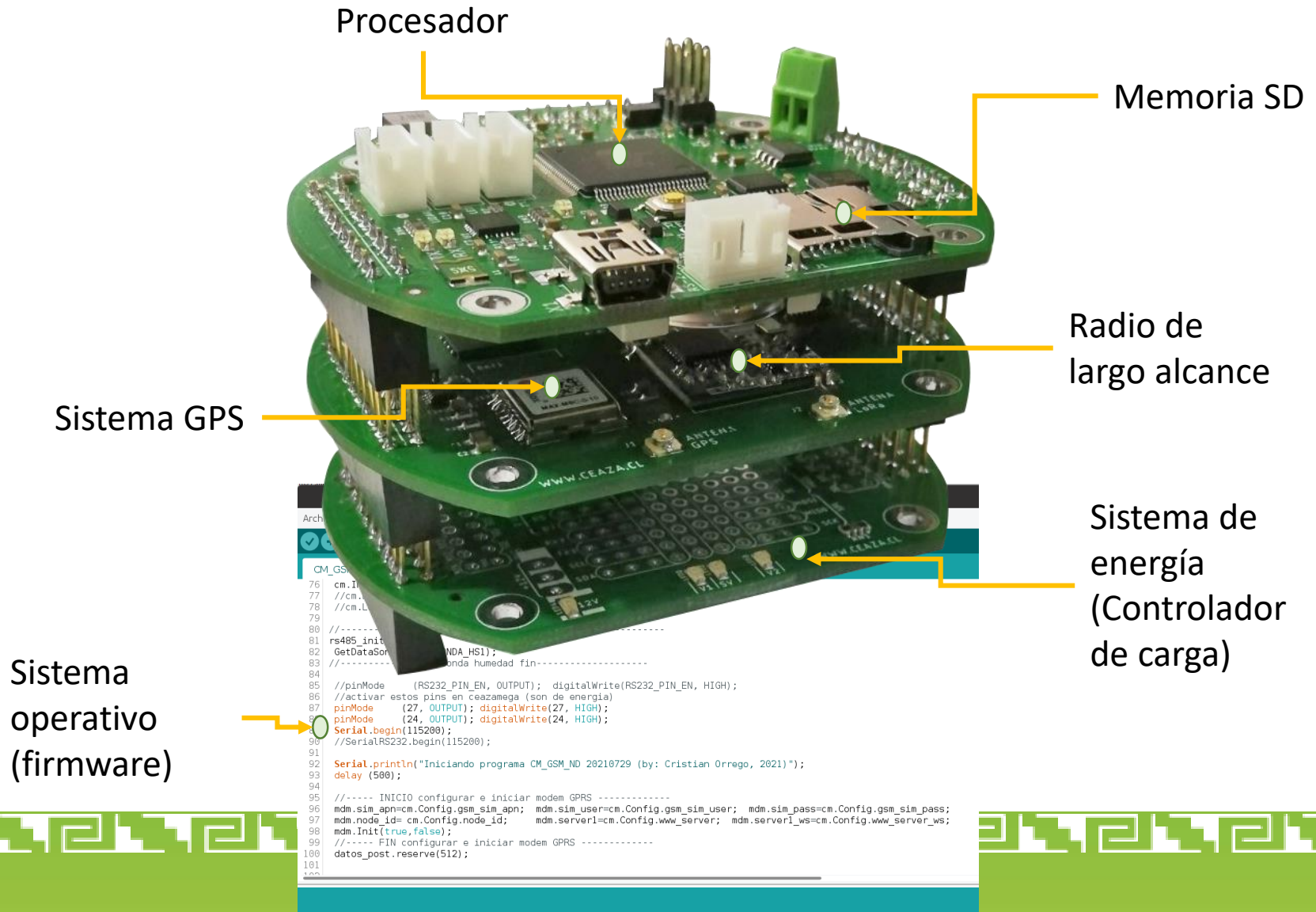
Bajo tamaño

Bajo consumo

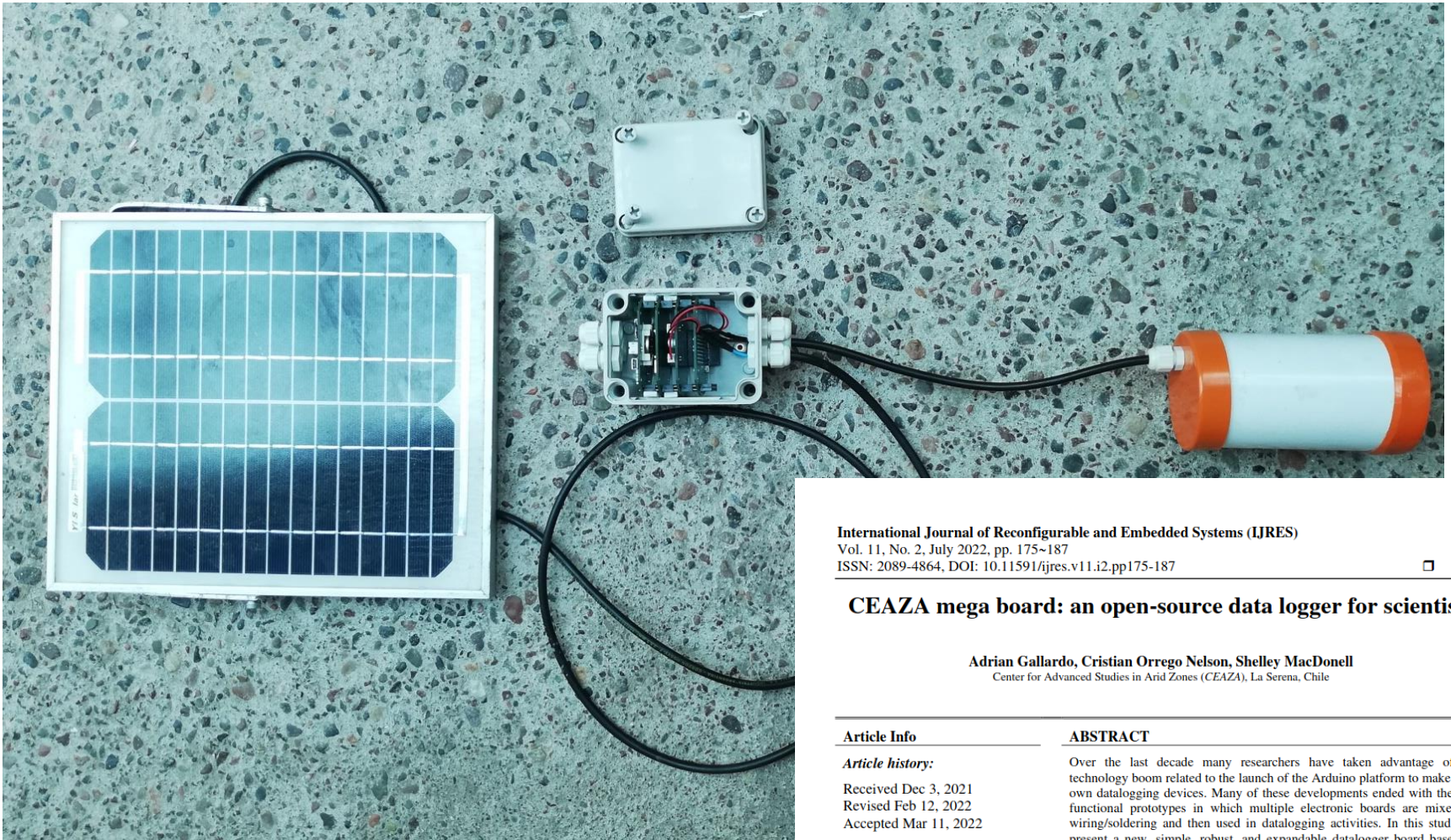
Sistemas a medida



2020-2021: Nodos de altura, hardware



2021: Nodos de altura, fabricación



International Journal of Reconfigurable and Embedded Systems (IJRES)
Vol. 11, No. 2, July 2022, pp. 175~187
ISSN: 2089-4864, DOI: 10.11591/ijres.v11.i2.pp175-187

□ 175

CEAZA mega board: an open-source data logger for scientists

Adrian Gallardo, Cristian Orrego Nelson, Shelley MacDonell
Center for Advanced Studies in Arid Zones (CEAZA), La Serena, Chile

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Embedded system
Environmental monitoring
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Science

ABSTRACT

Over the last decade many researchers have taken advantage of the technology boom related to the launch of the Arduino platform to make their own datalogging devices. Many of these developments ended with the first functional prototypes in which multiple electronic boards are mixed by wiring/soldering and then used in datalogging activities. In this study we present a new, simple, robust, and expandable datalogger board based on maker's community integrations. Our datalogger board extends previous work in this area as we designed an Arduino Mega 2560 derivative integrated board that is compatible with existing developments but was also designed and implemented considering requirements such as low power consumption, expandability, and integration. Different tests were made so reliability in low temperatures and low energy needs are satisfied. It is expected that the scientific community can add this board to their tool set, as this board solves the energy problem and present an easy transition from handmade logger integrations.

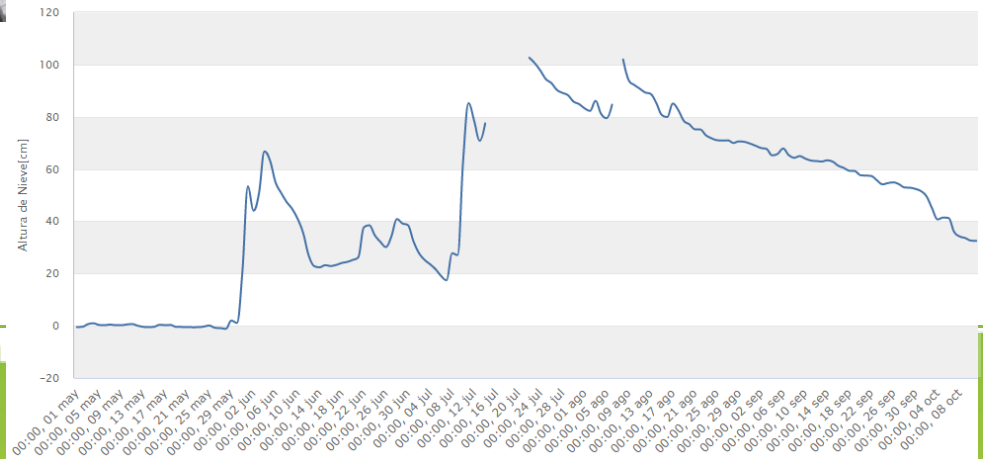
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2021: Nodos de altura, pruebas



Gráfico de Altura de Nieve[cm]

Comparación de valores en Tascadero

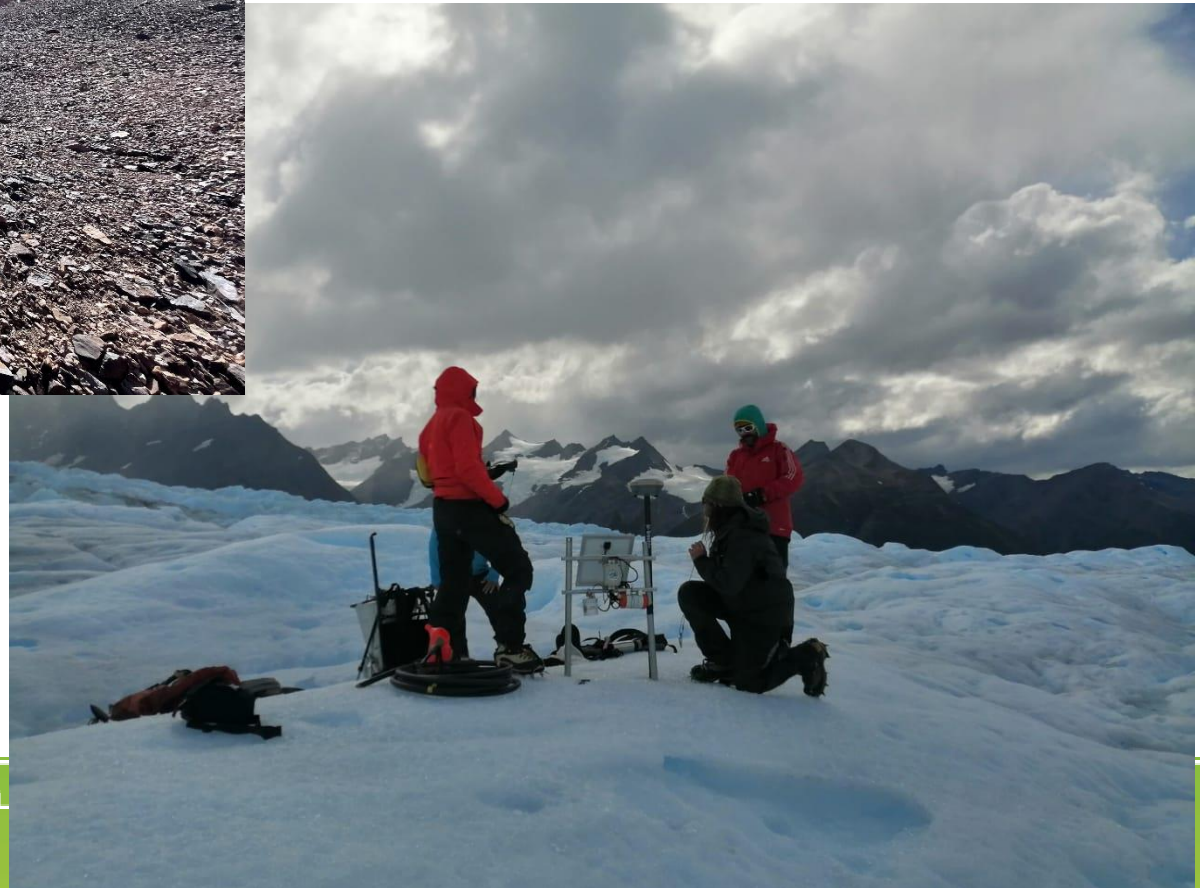


2021: Nodos de altura, transferencia



Glaciología IANIGLA,
Glaciar Perito Moreno

Glaciología CEAZA,
Glaciar El Tapado



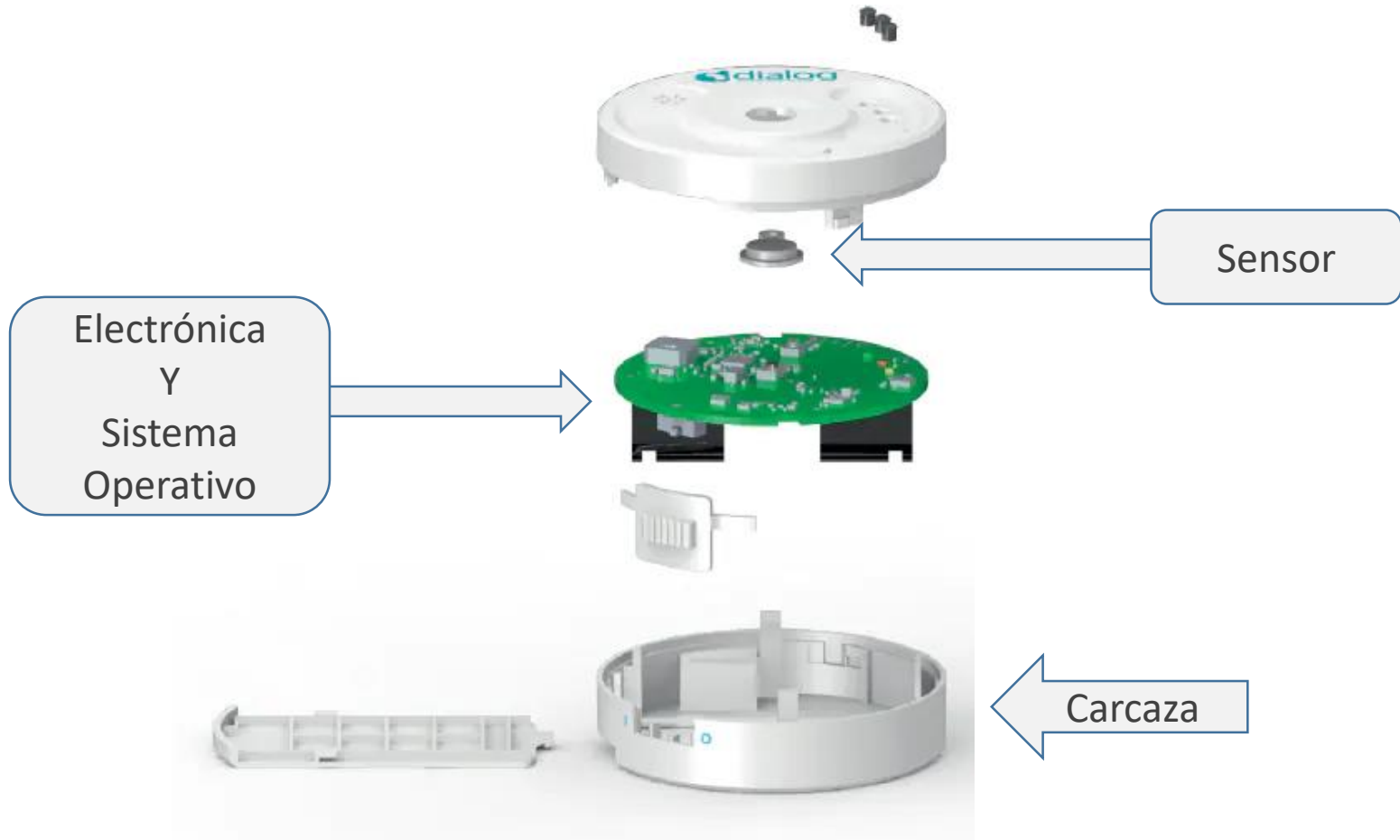
Etapla 3:

Mejorando los TRL

(ANID-IDEA, 2022-2024)



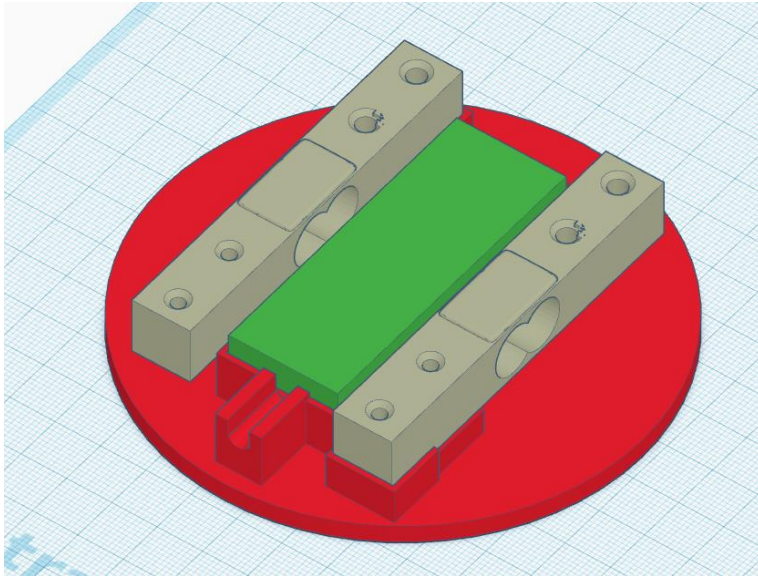
Sistemas integrados



Hacia productos finales...



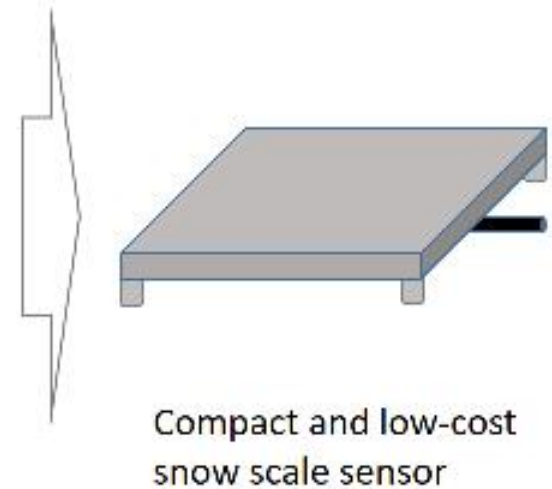
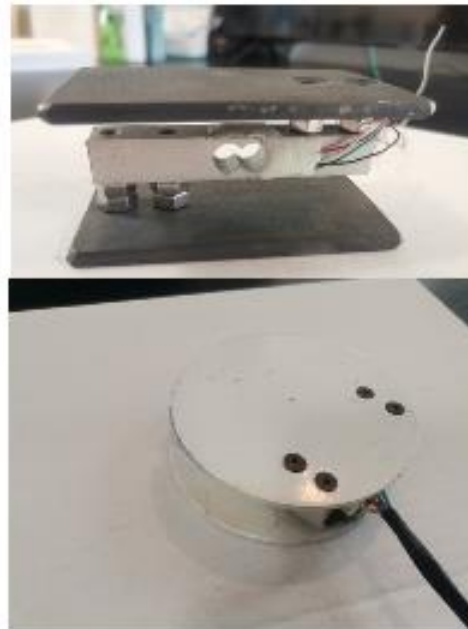
Desarrollo de sensores



Technological development of Snow Scale Sensor

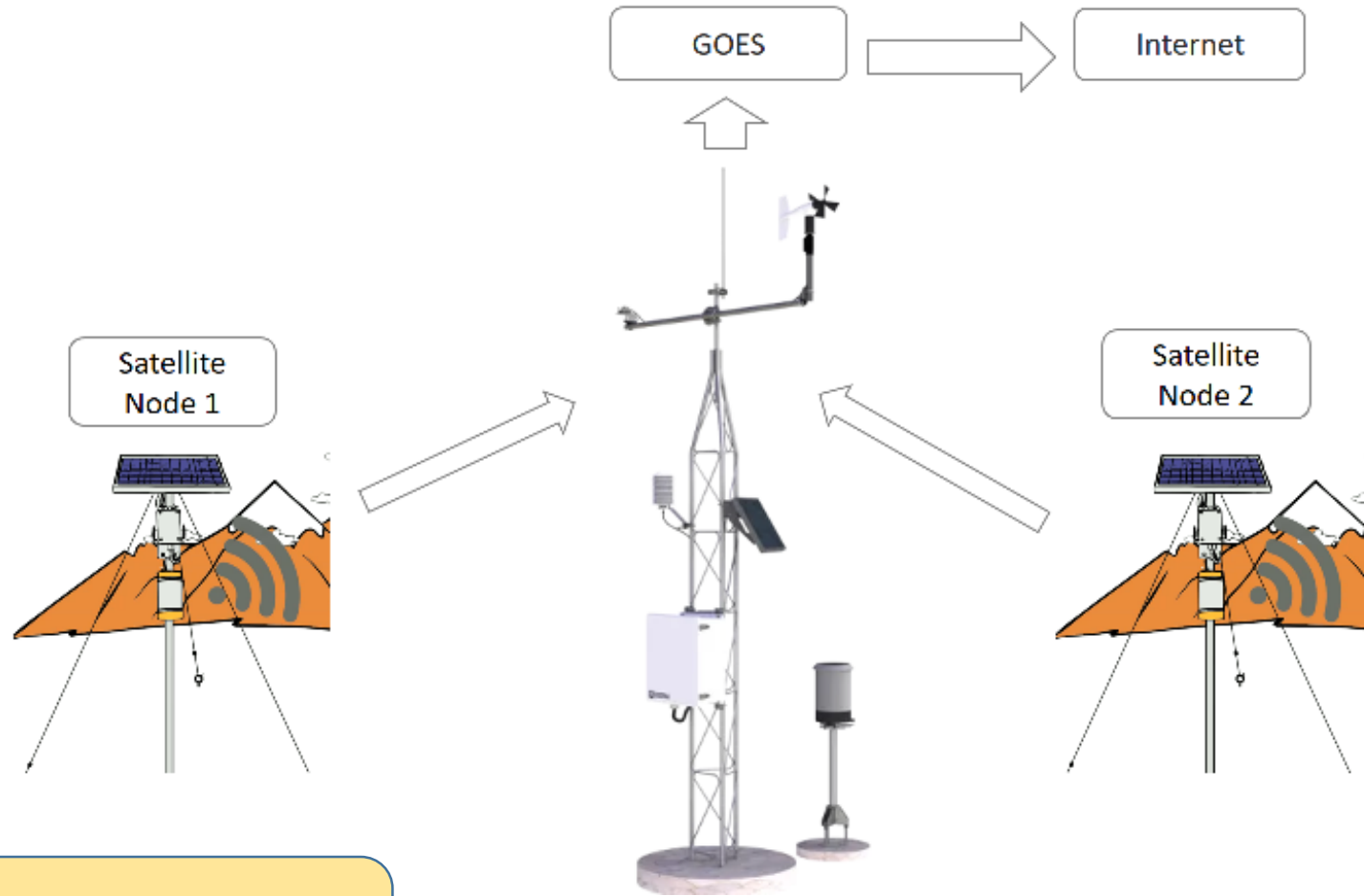
Proof of concept
(2020-2011)

CEAZAscale V1
(2022/25)



Compact and low-cost
snow scale sensor

Objetivo: Red nival de bajo costo



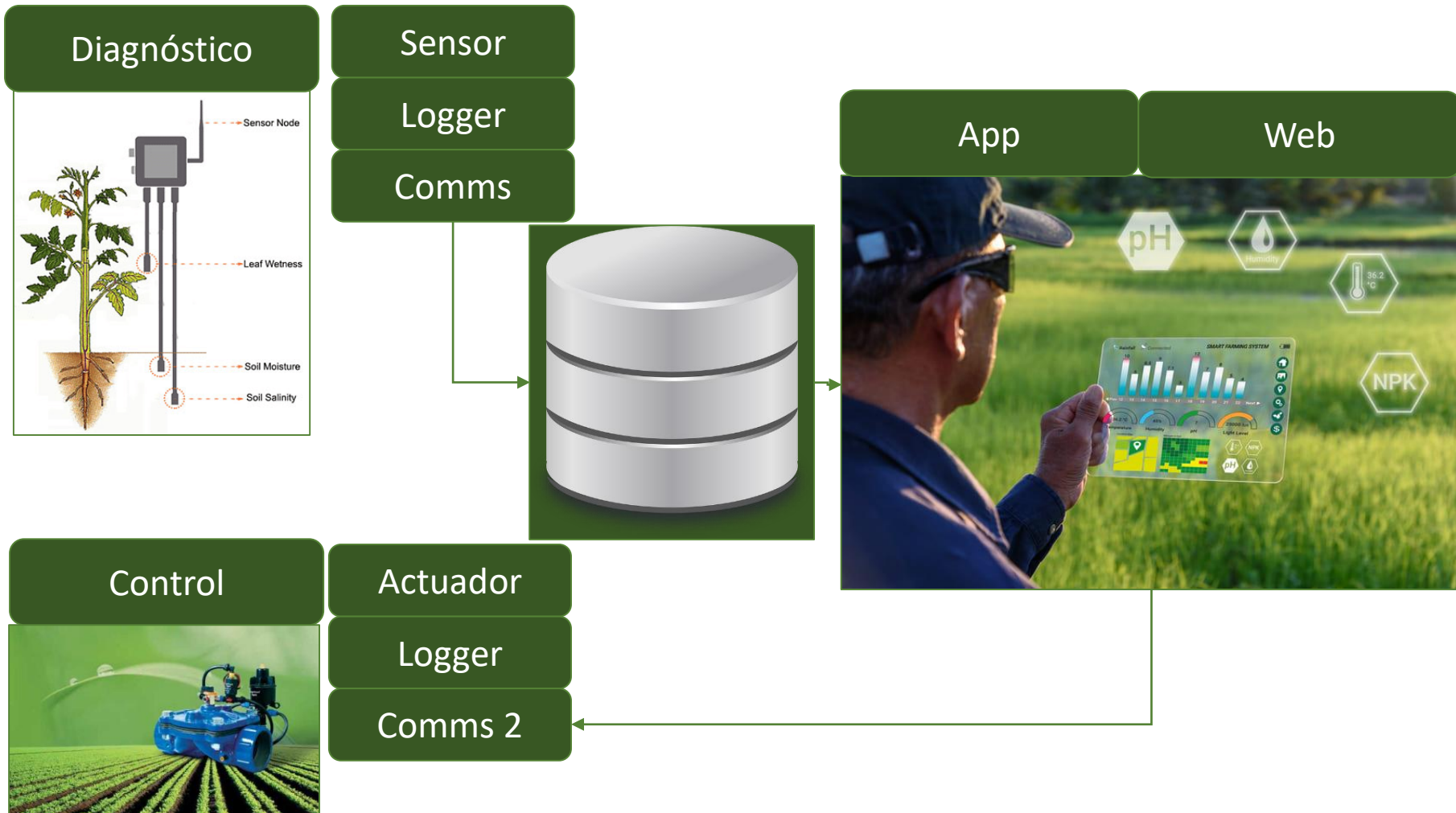
Y si transmitimos
por SWARM?

Resultados y objetivos



Fin...

Y también para el agro (IoT)..



Desde la mirada del pequeño agricultor