The origins	The Land 0000	Construction & Start	El Sauce Today OO	Upcoming projects	Questions

El Sauce Observatory

Telescope Hosting in Chile : Summary of the construction of a world-class observatory

Author : Dr. Vincent Suc1

¹ ObsTech El Sauce Observatory Rio Hurtado CHILE

March 15th 2019



The origins 0000	The Land 0000	Construction & Start	El Sauce Today	Upcoming projects	Questions
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- 3 Construction & Start
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The origins	The Land	Construction & Start	El Sauce Today	Upcoming projects	Questions
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The Actors					
The Actor	S				



The origins	The Land	Construction & Start	El Sauce Today	Upcoming projects	Questions
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The Actors					
The Acto	rs				



Astrophysics Professor / Exoplaneteer Pontificia Universidad Católica de Chile Hat-SOUTH Chile / CHAT

Andrés Jordán



The origins	The Land	Construction & Start	El Sauce Today	Upcoming projects	Questions
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The Actors					
The Acto	ors				



Astrophysics Professor / Exoplaneteer Pontificia Universidad Católica de Chile Hat-SOUTH Chile / CHAT

Andrés JordánSantiago Royo



Optics Professor Universidad Politécnica de Catalunya CD6 - Laboratoire de Capteurs & systèmes



The origins	The Land	Construction & Start	El Sauce Today	Upcoming projects	Questions
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The Actors					
The Acto	ors				



Astrophysics Professor / Exoplaneteer Pontificia Universidad Católica de Chile Hat-SOUTH Chile / CHAT

- Andrés Jordán
- Santiago Royo
- Vincent Suc



Optics Professor Universidad Politécnica de Catalunya CD6 - Laboratoire de Capteurs & systèmes



Telescope Engineer, Ph.D. Astro-Engineering @PUC V.P. SIRENE Local Support @Clay 6.5m F/5 Hat-SOUTH/CHAT

The origins	The Land	Construction & Start	El Sauce Today	Upcoming projects	Questions
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About using Small	Robotic Scientific Instru	uments			
HAT-SO	UTH experi	ence			





The origins	The Land	Construction & Start	El Sauce Today	Upcoming projects	Questions
0000					
About using Small	Robotic Scientific Instru	uments			
HAT-SO	UTH experi	ience			

Installed at Las Campanas in 2010 8 Telescopes 50+ Exoplanets



Support is expensive for the observatories



The origins	The Land	Construction & Start	El Sauce Today	Upcoming projects	Questions
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About using Small	Robotic Scientific Instru	uments			
HAT-SO	UTH experi	ence			

Installed at Las Campanas in 2010 8 Telescopes 50+ Exoplanets



Support is expensive for the observatoriesFew dedicated on-site support



The origins	The Land	Construction & Start	El Sauce Today	Upcoming projects	Questions
0000					
About using Small	Robotic Scientific Instru	uments			
HAT-SO	UTH experi	ence			



- Support is expensive for the observatories
- Few dedicated on-site support
- Limited Bandwidth



The origins	The Land	Construction & Start	El Sauce Today	Upcoming projects	Questions
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About using Small	Robotic Scientific Instru	uments			
HAT-SO	UTH experi	ence			



- Support is expensive for the observatories
- Few dedicated on-site support
- Limited Bandwidth
- Running Cost is transferred to the hosting fee of the projects



The origins	The Land	Construction & Start	El Sauce Today	Upcoming projects	Questions
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About using Small	Robotic Scientific Instru	uments			
HAT-SO	UTH experi	ence			



- Support is expensive for the observatories
- Few dedicated on-site support
- Limited Bandwidth
- Running Cost is transferred to the hosting fee of the projects
- THERE IS A SCIENTIFIC INTEREST FOR A DEDICATED STRUCTURE



The origins	The Land	Construction & Start	El Sauce Today	Upcoming projects	Questions
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About using Small	Robotic Scientific Instru	iments			
HAT-SO	UTH experi	ence			



- Support is expensive for the observatories
- Few dedicated on-site support
- Limited Bandwidth
- Running Cost is transferred to the hosting fee of the projects
- THERE IS A SCIENTIFIC INTEREST FOR A DEDICATED STRUCTURE
- LONG TERM INTEREST FOR AMATEUR ASTRONOMERS!



The origins	The Land	Construction & Start	El Sauce Today	Upcoming projects	Questions
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The need					
The second					
The need					

A dedicated **PROFESIONAL** structure





The origins	The Land	Construction & Start	El Sauce Today	Upcoming projects	Questions
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The need					
The need	1				

- A dedicated **PROFESIONAL** structure
- Garantee PERENNITY





The origins	The Land	Construction & Start	El Sauce Today	Upcoming projects	Questions
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The need					
The second					
The need					

- A dedicated **PROFESIONAL** structure
- Garantee PERENNITY
- Acces from the capital < 8h</p>





The origins	The Land	Construction & Start	El Sauce Today	Upcoming projects	Questions
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The need					
The need	1				

- A dedicated **PROFESIONAL** structure
- Garantee PERENNITY
- Acces from the capital < 8h</p>
- Very high bandwidth Internet





The origins	The Land	Construction & Start	El Sauce Today	Upcoming projects	Questions
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The need					
The need					

- A dedicated **PROFESIONAL** structure
- Garantee PERENNITY
- Acces from the capital < 8h</p>
- Very high bandwidth Internet
- Capacity : 50-100 Telescopes





The origins	The Land	Construction & Start	El Sauce Today	Upcoming projects	Questions
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The need					
The need					

- A dedicated **PROFESIONAL** structure
- Garantee PERENNITY
- Acces from the capital < 8h</p>
- Very high bandwidth Internet
- Capacity : 50-100 Telescopes
- FINANCIALLY ACCESSIBLE TO AMATEURS ASTRONOMERS





The origins	The Land	Construction & Start	El Sauce Today	Upcoming projects	Questions
0000					
Funding					
Funding					

Installations Salaries 2 years White Run



The origins	The Land	Construction & Start	El Sauce Today	Upcoming projects	Questions
0000					
Funding					
Funding					

Installations Salaries 2 years White Run

ObsTech is a UC Spin-Off (Universidad Católica)



The origins	The Land	Construction & Start	El Sauce Today	Upcoming projects	Questions
0000					
Funding					
Funding					

Installations Salaries 2 years White Run

ObsTech is a UC Spin-Off (Universidad Católica)

50% CORFO Funding



The origins	The Land	Construction & Start	El Sauce Today	Upcoming projects	Questions
0000					
Funding					
Funding					

Installations Salaries 2 years White Run

- ObsTech is a UC Spin-Off (Universidad Católica)
- 50% CORFO Funding
- 50% Private Funding



The origins	The Land	Construction & Start	El Sauce Today	Upcoming projects	Questions
0000					
Funding					
Funding					

Installations Salaries 2 years White Run

- ObsTech is a UC Spin-Off (Universidad Católica)
- 50% CORFO Funding
- 50% Private Funding
- Collaboration with CHILESCOPE



The origins	The Land	Construction & Start	El Sauce Today	Upcoming projects	Questions
Selecting "Short Lis					
The Shor	rt List				





The origins	The Land	Construction & Start	El Sauce Today	Upcoming projects	Questions
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Selecting "Short Li	ist"				
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The origins	The Land	Construction & Start	El Sauce Today	Upcoming projects	Questions
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Selecting "Short Lis	st"				

The Short List





The origins	The Land	Construction & Start	El Sauce Today	Upcoming projects	Questions
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Selecting "Short Li	ist"				
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The origins	The Land	Construction & Start	El Sauce Today	Upcoming projects	Questions
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Selecting "Short Li	st"				
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Site1 : Campanario





The origins	The Land	Construction & Start	El Sauce Today	Upcoming projects	Questions
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Selecting "Short L	ist"				
The Sho	ort List				

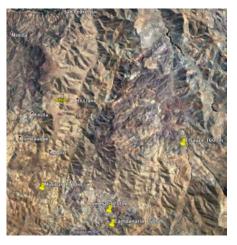
Site1 : CampanarioSite2 : Romeral





The origins	The Land	Construction & Start	El Sauce Today	Upcoming projects	Questions
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Selecting "Short L	ist"				
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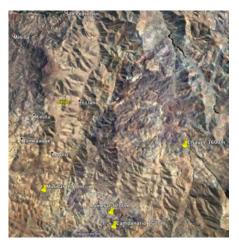
- Site1 : Campanario
- Site2 : Romeral
- Site3 : Minillas





The origins	The Land	Construction & Start	El Sauce Today	Upcoming projects	Questions
Selecting "Short List					
The Shor	rt List				

- Site1 : Campanario
- Site2 : Romeral
- Site3 : Minillas
- Site4 : ElSauce





The origins	The Land	Construction & Start	El Sauce Today	Upcoming projects	Questions
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Types of land own	ers				
Types of	land owne	rs			







The origins	The Land	Construction & Start	El Sauce Today	Upcoming projects	Questions
	0000				
Types of land owner					
Types of	land owne	rs			

Site1 : Campanario -> Family communty





The origins	The Land	Construction & Start	El Sauce Today	Upcoming projects	Questions
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Types of land own	ers				
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Types of	land owne	rs			

- Site1 : Campanario -> Family communty
- Site2 : Romeral -> Farming community

50-100 owners - Legal Restrictions -> Danger!





The origins	The Land	Construction & Start	El Sauce Today	Upcoming projects	Questions
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Types of land own	ers				
Tupos of	land owno	vre			

- Site1 : Campanario -> Family communty
- Site2 : Romeral -> Farming community
- Site3 : Minillas -> Farming community

50-100 owners - Legal Restrictions -> Danger!





The origins	The Land	Construction & Start	El Sauce Today	Upcoming projects	Questions
	0000				
Types of land own	ers				
_					
Types of	land owne	rs			

Land owners

- Site1 : Campanario -> Family communty
- Site2 : Romeral -> Farming community
- Site3 : Minillas -> Farming community
- Site4 : ElSauce -> Single owner





The orig		The Land ○○●○	Construction & Start	El Sauce Today OO	Upcoming projects	Questions
Owners	ship study					
Ow	nership	study				
	Mining					
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		Com				
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Vincent SUC ObsTech

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Owners	hip study					
Ow	nership	study				
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	Mining					
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The Land

Questions

The origins	The Land	Construction & Start	El Sauce Today	Upcoming projects	Questions
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Ownership study					
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Ownersr	nip study				

Mining

- Site1 : Campanario -> 1 Prospection authorization 2km North-West
- Site2 : Romeral -> 1 Prospection authorization 2km South-West



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The origins	The Land	Construction & Start	El Sauce Today	Upcoming projects	Questions
	0000				
Ownership study					
Ownersł	nip study				

Mining

- Site1 : Campanario -> 1 Prospection authorization 2km North-West
- Site2 : Romeral -> 1 Prospection authorization 2km South-West
- Site3 : Minillas -> Many operation right recently authorized (Rare earth minerals)



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The origins	The Land	Construction & Start	El Sauce Today	Upcoming projects	Questions
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Ownership study					
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Ownership study

Mining

- Site1 : Campanario -> 1 Prospection authorization 2km North-West
- Site2 : Romeral -> 1 Prospection authorization 2km South-West
- Site3 : Minillas -> Many operation right recently authorized (Rare earth minerals) DANGER !



The origins	The Land	Construction & Start	El Sauce Today	Upcoming projects	Questions
	0000				
Ownership study					
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Ownership study

Mining

- Site1 : Campanario -> 1 Prospection authorization 2km North-West
- Site2 : Romeral -> 1 Prospection authorization 2km South-West
- Site3 : Minillas -> Many operation right recently authorized (Rare earth minerals) DANGER !
- Site4 : ElSauce -> Old mine which explotation terminated 5 years ago 10km south-east



The origins	The Land	Construction & Start	El Sauce Today	Upcoming projects	Questions
	0000				
Seeing measurement					
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The origins	The Land	Construction & Start	El Sauce Today	Upcoming projects	Questions
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Seeing measurement					

Seeing measurements

DIMM C11





The origins	The Land	Construction & Start	El Sauce Today	Upcoming projects	Questions
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Seeing measureme	nts				
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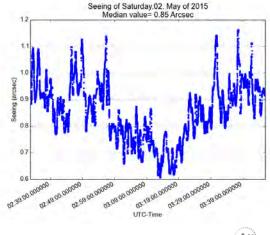
- DIMM C11
- 2 weeks on each site 2, 3 et 4





The origins	The Land	Construction & Start	El Sauce Today	Upcoming projects	Questions
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Seeing measuremen	its				

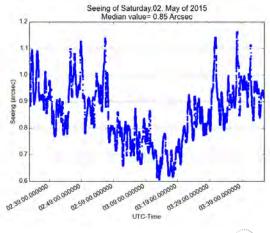
- DIMM C11
- 2 weeks on each site 2, 3 et 4
- Correlation with Gemini





The origins	The Land	Construction & Start	El Sauce Today	Upcoming projects	Questions
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Seeing measuremen	its				

- DIMM C11
- 2 weeks on each site 2, 3 et 4
- Correlation with Gemini
- L'altitude does not make a difference
- El Sauce gets better results





The origins	The Land	Construction & Start	El Sauce Today	Upcoming projects	Questions
		00000			
Acces					

Creation of 3km unpaved access





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The origins	The Land	Construction & Start	El Sauce Today	Upcoming projects	Questions
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Électricity					
Électricity					





The origins	The Land	Construction & Start	El Sauce Today	Upcoming projects	Questions
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Électricity					
Électricity					

40X pannels 320W





The origins	The Land	Construction & Start	El Sauce Today	Upcoming projects	Questions
		00000			
Électricity					
Électricity					

- 40X pannels 320W
- 24X 210Ah





The origins	The Land	Construction & Start	El Sauce Today	Upcoming projects	Questions
		00000			
Électricity					
Électricity					

- 40X pannels 320W
- 24X 210Ah
- Diesel Generator 5.5kW





The origins	The Land	Construction & Start	El Sauce Today	Upcoming projects	Questions
		00000			
Électricity					
Électricity					

- 40X pannels 320W
- 24X 210Ah
- Diesel Generator 5.5kW
- Goal : 3 days without Sun !





The origins	The Land	Construction & Start	El Sauce Today	Upcoming projects	Questions
Internet					
Internet					





The origins	The Land 0000	Construction & Start	El Sauce Today	Upcoming projects	Questions
Internet					
Internet					

Fiber line opening





The origins	The Land 0000	Construction & Start	El Sauce Today	Upcoming projects	Questions
Internet					
Internet					

- Fiber line opening
- Association with the provider Local WISPING





The origins	The Land 0000	Construction & Start	El Sauce Today	Upcoming projects	Questions
Internet					
Internet					

- Fiber line opening
- Association with the provider Local WISPING
- Relay 5GHz a 300Mb/s over 15km





The origins	The Land	Construction & Start	El Sauce Today 00	Upcoming projects	Questions
Internet					
Internet					





The origins	The Land 0000	Construction & Start	El Sauce Today	Upcoming projects	Questions
Internet					
Internet					

- Fiber line opening
- Association with the provider Local WISPING
- Relay 5GHz a 300Mb/s over 15km
- Obtention of licences





The origins	The Land 0000	Construction & Start	El Sauce Today	Upcoming projects	Questions
Internet					
Internet					

- Fiber line opening
- Association with the provider Local WISPING
- Relay 5GHz a 300Mb/s over 15km
- Obtention of licences
- Dedicated 75Mb/s Symmetric !





The origins	The Land 0000	Construction & Start	El Sauce Today	Upcoming projects	Questions
Internet					
Internet					

- Fiber line opening
- Association with the provider Local WISPING
- Relay 5GHz a 300Mb/s over 15km
- Obtention of licences
- Dedicated 75Mb/s Symmetric !
- Local returns



INTERNET ACCESS FOR THE SCHOOL AND EDUCATIONAL PROJECTS !



The origins	The Land 0000	Construction & Start	El Sauce Today	Upcoming projects	Questions
Internet					
Internet					

- Fiber line opening
- Association with the provider Local WISPING
- Relay 5GHz a 300Mb/s over 15km
- Obtention of licences
- Dedicated 75Mb/s Symmetric !
- Local returns
- Regional returns



INTERNET ACCESS FROM SAMO ALTO TO RIO HURTADO (80KM) EXISTS THANKS TO THE EXISTENCE OF THE OBSERVATORY !



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El Sauce Observatory

The origins	The Land	Construction & Start	El Sauce Today	Upcoming projects	Questions
Construction	0000	00000			
Chilesco	pe				

October 2015 :





The origins	The Land	Construction & Start ○○○●○	El Sauce Today	Upcoming projects	Questions
Construction					
Chilesco	ре				

November 2015 :





The origins	The Land 0000	Construction & Start ○○○●○	El Sauce Today	Upcoming projects	Questions
Construction					
Chilesco	ре				

July 2016 :





The origins	The Land	Construction & Start	El Sauce Today	Upcoming projects	Questions
Construction					
Chilesco	ре				

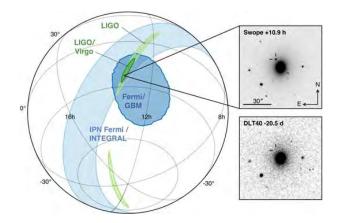
Operation : December 2016 :





The origins	The Land 0000	Construction & Start	El Sauce Today	Upcoming projects	Questions
Construction					
Chilescop	e				

August 2017 : Kilonova





The origins	The Land 0000	Construction & Start ○○○○●	El Sauce Today	Upcoming projects	Questions
Construction					
ObsTech					

Feburary 2016 : Construction starts





The origins	The Land 0000	Construction & Start	El Sauce Today	Upcoming projects	Questions
Construction					
ObsTech					

November 2016 : First telescope





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The origins	The Land	Construction & Start	El Sauce Today	Upcoming projects	Questions
		00000			
Construction					
<u>.</u>					
ObsTech					

Mars 2017 : Ciel Austral and the Telescope #9th !





The origins	The Land	Construction & Start	El Sauce Today	Upcoming projects	Questions
El Sauce	e Today				

Evolution since January 2017



The origins	The Land	Construction & Start	El Sauce Today	Upcoming projects	Questions
El Sauce	e Today				

Battery Capacity X4



The origins	The Land 0000	Construction & Start	El Sauce Today	Upcoming projects	Questions
El Sauce	e Today				

- Battery Capacity X4
- Internet 100Mb/s + Backup 70Mbs + 4G



The origins	The Land	Construction & Start	El Sauce Today	Upcoming projects	Questions
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El Sauce Today

- Battery Capacity X4
- Internet 100Mb/s + Backup 70Mbs + 4G
- 4 new buildings





The origins	The Land	Construction & Start	El Sauce Today	Upcoming projects	Questions
El Sauce	e Today				

- Battery Capacity X4
- Internet 100Mb/s + Backup 70Mbs + 4G
- 4 new buildings
- 8 employees full time



The origins	The Land	Construction & Start	El Sauce Today	Upcoming projects	Questions
El Sauce	e Today				

- Battery Capacity X4
- Internet 100Mb/s + Backup 70Mbs + 4G
- 4 new buildings
- 8 employees full time
- 2 guards and one technician on site



The origins	The Land	Construction & Start	El Sauce Today	Upcoming projects	Questions
El Sauce	e Today				

- Battery Capacity X4
- Internet 100Mb/s + Backup 70Mbs + 4G
- 4 new buildings
- 8 employees full time
- 2 guards and one technician on site
- Continuous presence



The origins	The Land	Construction & Start	El Sauce Today	Upcoming projects	Questions

El Sauce Today

- Battery Capacity X4
- Internet 100Mb/s + Backup 70Mbs + 4G
- 4 new buildings
- 8 employees full time
- 2 guards and one technician on site
- Continuous presence
- 30 telescopes operating





The origins	The Land	Construction & Start	El Sauce Today	Upcoming projects	Questions

El Sauce Today

- Battery Capacity X4
- Internet 100Mb/s + Backup 70Mbs + 4G
- 4 new buildings
- 8 employees full time
- 2 guards and one technician on site
- Continuous presence
- 30 telescopes operating
- 35 telescopes August 2019





The origins	The Land	Construction & Start	El Sauce Today ●○	Upcoming projects	Questions
The Service					
The Ser	vice "El Sa	uce"			



The origins	The Land	Construction & Start	El Sauce Today	Upcoming projects	Questions
The Service					
The Ser	vice "El Sa	uce"			

 Main Connexion 100Mb/s Symmetric MOVISTAR



The origins	The Land	Construction & Start	El Sauce Today	Upcoming projects	Questions
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The Service					
I ne Ser	vice "El Sa	uce			

- Main Connexion 100Mb/s Symmetric MOVISTAR
- Backup 50Mbs ENTEL Pichasca



The origins	The Land	Construction & Start	El Sauce Today	Upcoming projects	Questions
The Service	0000	00000			
The Ser	vice "El Sa	uce"			

- Main Connexion 100Mb/s Symmetric MOVISTAR
- Backup 50Mbs ENTEL Pichasca
- Backup 20Mbs ENTEL Monte Patria



The origins	The Land	Construction & Start	El Sauce Today	Upcoming projects	Questions
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The Service					
The Ser	vice "El Sa	uce"			

- Main Connexion 100Mb/s Symmetric MOVISTAR
- Backup 50Mbs ENTEL Pichasca
- Backup 20Mbs ENTEL Monte Patria
- Backup 4G only as a last solution



The origins	The Land	Construction & Start	El Sauce Today	Upcoming projects	Questions
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The Ser	vice "El Sa	uce"			

Technical Service

Guards 24/7



The origins	The Land	Construction & Start	El Sauce Today	Upcoming projects	Questions
The Service					
The Ser	vice "El Sa	uce"			

- Guards 24/7
- On-Site Amateur Astronomer



The origins	The Land	Construction & Start	El Sauce Today	Upcoming projects	Questions
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The Service					

- Guards 24/7
- On-Site Amateur Astronomer
- Missions from Santiago



The origins		The Land	Construction & Start	El Sauce Today	Upcoming projects	Questions
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- Guards 24/7
- On-Site Amateur Astronomer
- Missions from Santiago
- Installations on-demand



The origins	The Land	Construction & Start	El Sauce Today	Upcoming projects	Questions
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The Service					
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- Guards 24/7
- On-Site Amateur Astronomer
- Missions from Santiago
- Installations on-demand
- CNC access, workshops etc.



The origins	The Land	Construction & Start	El Sauce Today	Upcoming projects	Questions
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The Service					
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- Guards 24/7
- On-Site Amateur Astronomer
- Missions from Santiago
- Installations on-demand
- CNC access, workshops etc.
- We do not have "Second Class" clients



The origins	The Land	Construction & Start	El Sauce Today	Upcoming projects	Questions
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The Service					

The team : (Historical order)

- Vincent Suc
- Andres Jordan
- Santi Royo



The origins	The Land	Construction & Start	El Sauce Today	Upcoming projects	Questions
			$\odot \circ$		
The Service					

The team : (Historical order)

- Vincent Suc
- Andres Jordan
- Santi Royo
- Samuel Ropert

Electrical Engineer UC Programmer Missions from Santiago



The origins	The Land	Construction & Start	El Sauce Today	Upcoming projects	Questions
			$\odot \circ$		
The Service					

The team : (Historical order)

- Vincent Suc
- Andres Jordan
- Santi Royo
- Samuel Ropert
- Laureano Pizarro

Guard 24/7 Emergency Technician



The origins	The Land	Construction & Start	El Sauce Today	Upcoming projects	Questions
			$\odot \circ$		
The Service					

The team : (Historical order)

- Vincent Suc
- Andres Jordan
- Santi Royo
- Samuel Ropert
- Laureano Pizarro
- Edys Flores

Guard 24/7 Emergency Technician



The origins	The Land	Construction & Start	El Sauce Today	Upcoming projects	Questions
			00		
The Service					

The team : (Historical order)

- Vincent Suc
- Andres Jordan
- Santi Royo
- Samuel Ropert
- Laureano Pizarro
- Edys Flores
- Rodrigo Rojas

Electrical Engineer Missions from Santiago



The origins	The Land	Construction & Start	El Sauce Today	Upcoming projects	Questions
			$\odot \circ$		
The Service					

The team : (Historical order)

- Vincent Suc
- Andres Jordan
- Santi Royo
- Samuel Ropert
- Laureano Pizarro
- Edys Flores
- Rodrigo Rojas
- Giselle Ulloa

Coordinator/Administrator Importations - Documentation - Customs Santiago



The origins	The Land	Construction & Start	El Sauce Today	Upcoming projects	Questions
			••		
The Service					

The team : (Historical order)

- Vincent Suc
- Andres Jordan
- Santi Royo
- Samuel Ropert
- Laureano Pizarro
- Edys Flores
- Rodrigo Rojas
- Giselle Ulloa
- Vicente Armstrong

Mechanic Engineer Mechanical Design Missions from Santiago



The origins	The Land	Construction & Start	El Sauce Today	Upcoming projects	Questions
			00		
The Service					

The team : (Historical order)

- Vincent Suc
- Andres Jordan
- Santi Royo
- Samuel Ropert
- Laureano Pizarro
- Edys Flores
- Rodrigo Rojas
- Giselle Ulloa
- Vicente Armstrong
- Jonathan Fertil

Astrophotograph / Amateur Astronomer On-site Technicien Emergencies / Lives on site



The origins	The Land	Construction & Start	El Sauce Today	Upcoming projects	Questions
			00		
Pricing					
<u> </u>					
Service	"El Sauce"				





The origins	The Land	Construction & Start	El Sauce Today	Upcoming projects	Questions
			00		
Pricing					
Service	"El Sauco"				

Tarif : No Pro/am difference in pricing



The origins	The Land	Construction & Start	El Sauce Today	Upcoming projects	Questions
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Pricing					
Service '	"El Sauce"				

Tarif : No Pro/am difference in pricing CLP 5.000.000/year : 6600 euros/year (540 euros/month) No Entry fee



The origins	The Land	Construction & Start	El Sauce Today	Upcoming projects	Questions
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Pricing					
Service '	"El Sauce"				

Tarif : No Pro/am difference in pricing CLP 5.000.000/year : 6600 euros/year (540 euros/month) No Entry fee Extra charge if surface >9m2



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Tarif : No Pro/am difference in pricing CLP 5.000.000/year : 6600 euros/year (540 euros/month) No Entry fee Extra charge if surface >9m2 Possibility of a dedicated building



The origins	The Land	Construction & Start	El Sauce Today	Upcoming projects	Questions
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Pricing					
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Service	"El Sauce"				

Tarif :

- No Pro/am difference in pricing
- CLP 5.000.000/year : 6600 euros/year (540 euros/month)
- No Entry fee
- Extra charge if surface >9m2
- Possibilty of a dedicated building
- No Bandwidth Limitation
- Extra if upload > 10GB/jour



The origins	The Land	Construction & Start	El Sauce Today	Upcoming projects	Questions
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Service	"El Sauce"				

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- No Bandwidth Limitation
- Extra if upload > 10GB/jour
- SUPPORT IS INCLUDED

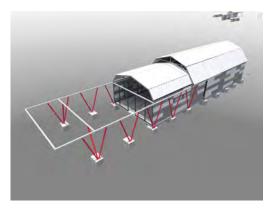


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Roll-Off X11 (Capacity for 11 additional telescopes Q3 2019)





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- Roll-Off X11 (Capacity for 11 additional telescopes Q3 2019)
- Eclipse 2019





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- Roll-Off X11 (Capacity for 11 additional telescopes Q3 2019)
- Eclipse 2019
- Cabin Q3 2019





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- 1 The origins
 - The Actors
 - About using Small Robotic Scientific Instruments
 - The need
 - Funding

2 The Land

- Selecting "Short List"
- Types of land owners
- Ownership study
- Seeing measurements
- 3 Construction & Start
 - Acces
 - Électricity
 - Internet
 - Construction
- 4 El Sauce Today
 - The Service
 - Pricing
- 5 Upcoming projects
- 6 Questions

