

The ESSS Citizen Science Project

A Model for Capacity Building, Scientific Discovery, and Science Communication



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Introduction to ESSS

- The Ethiopian Space Science Society (ESSS) is dedicated to promoting space science and astronomy across Ethiopia.
- Our core mission revolves around building foundational scientific literacy.
- We strive to develop practical research capacity within our borders, bringing science from theory to practice.
- This organization acts as the pivotal bridge between passionate individuals and structured scientific engagement.



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The CSP Overview



Open Initiative

The Citizen Science Project (CSP) functions as an open research and learning initiative, engaging students, amateur astronomers, and the public.



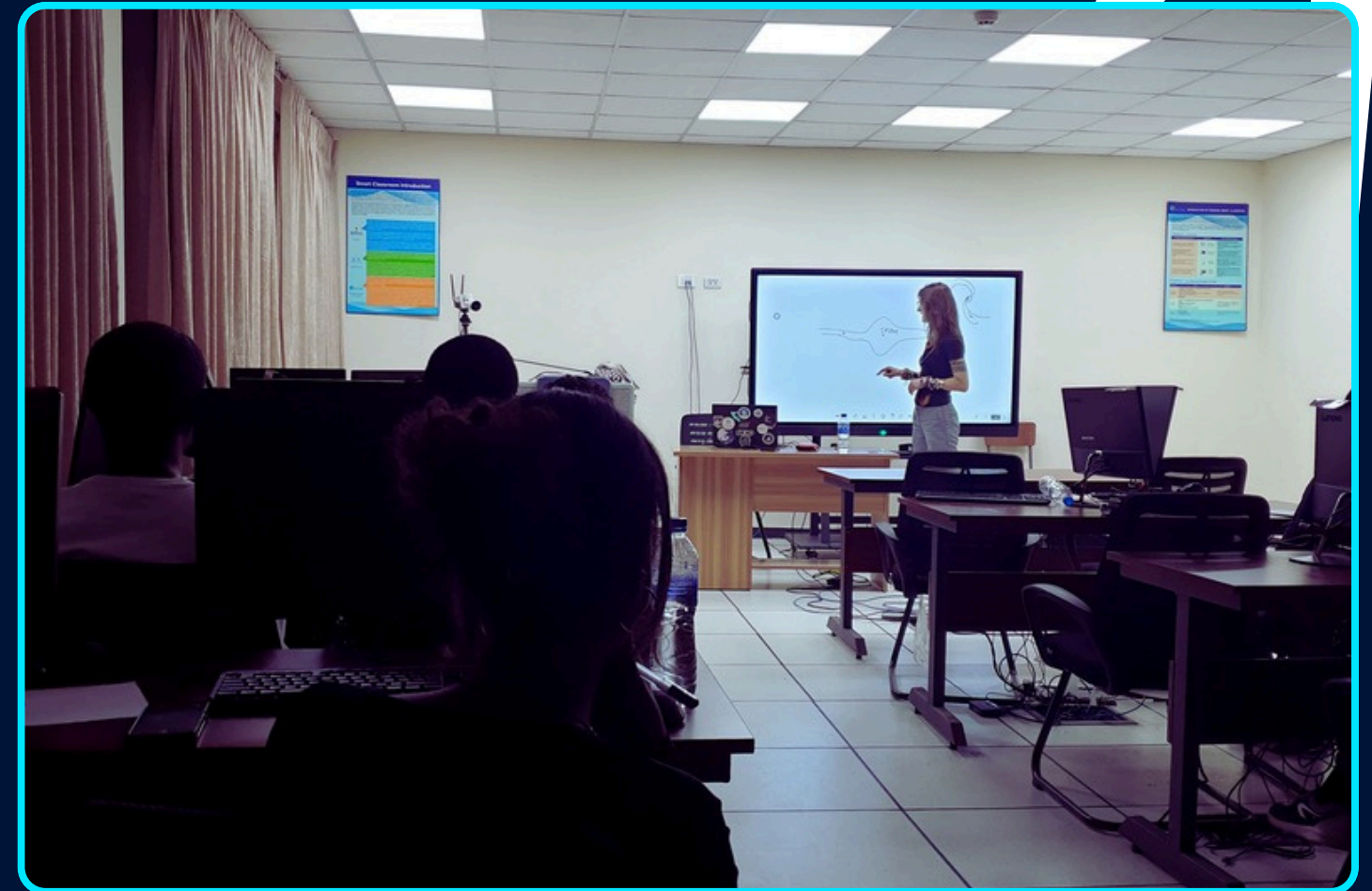
Global Partners

We maintain robust international partnerships with organizations such as Shadow the Scientist (StS), LCO, and the Pan African Citizen Science e-Lab.



Access to Tech

These collaborations are instrumental in providing participants with hands-on experience using remote telescopes and advanced data analysis tools.



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Early Attempts & Hurdles

Initial Staffing Model

In our early attempts, we tried to run the Citizen Science Project entirely internally through ESSS staff. While enthusiasm was high, the overlapping responsibilities with core institutional duties made this structurally unsustainable.

Management Bottlenecks

Administrative overhead quickly became overwhelming. Downloading massive image sets, assigning them to a single person, and tracking an individual's progress throughout an entire campaign proved too difficult to maintain.

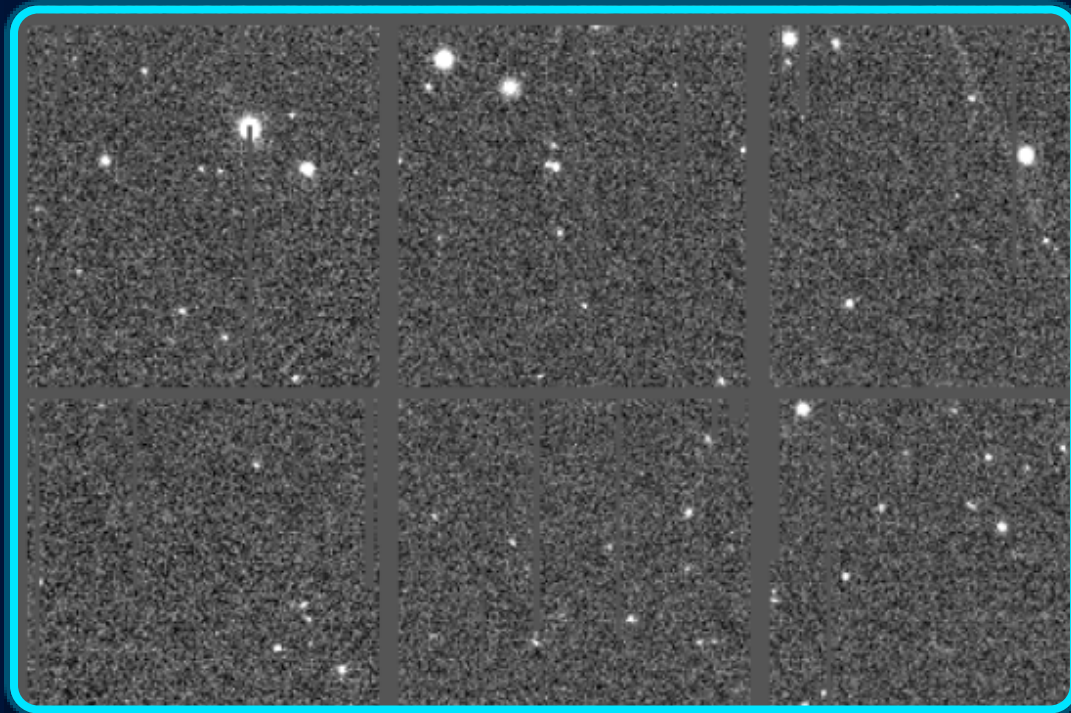
The Pivot to Decentralize

To assure the sustainability of the project and solve our management constraints, we radically decentralized the operational structure.

We recruited highly motivated participants from our initial runs to become campaign managers. By making sure there are enough volunteers to serve in a rotating phase, we distributed the workload and gave students a permanent stake in the program.

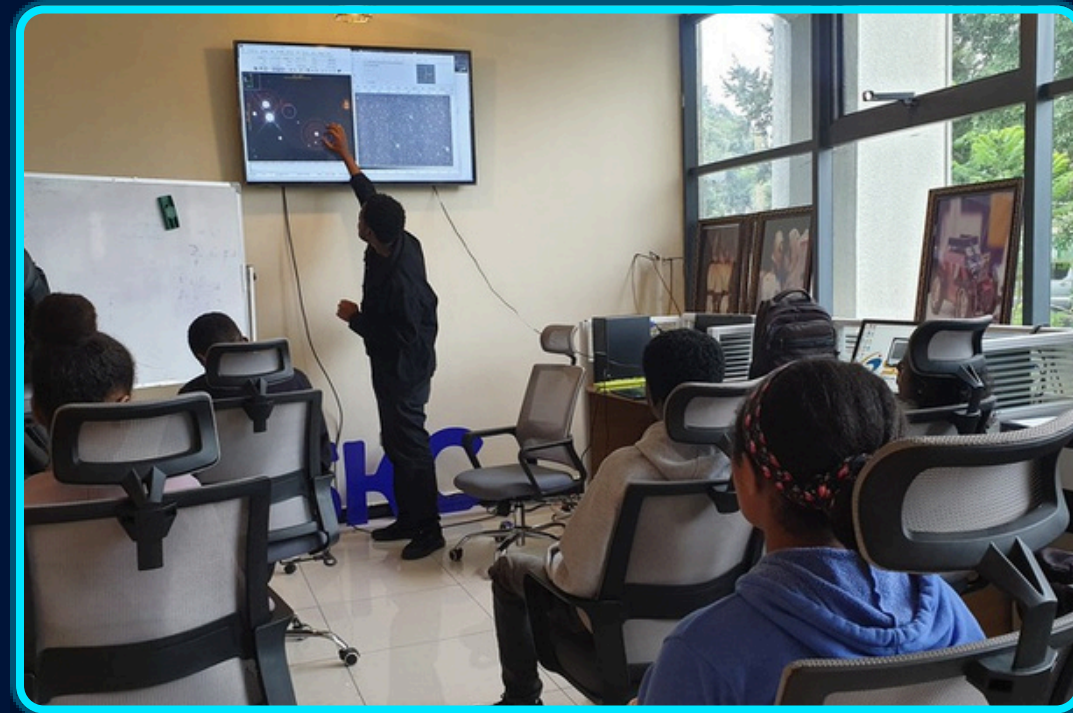


Core Global Campaigns —



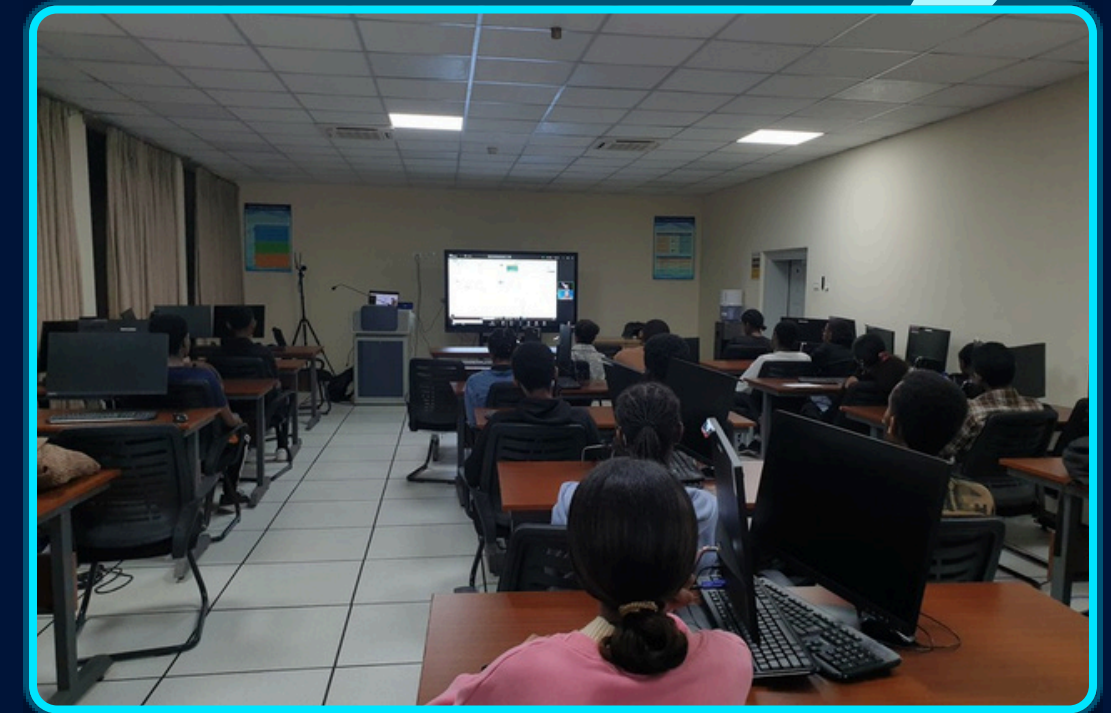
IASC Search Campaign

Our entry-point program with PACS e-Lab. Not technically demanding, requiring only a PC and internet to search for asteroids.



LCO Observation

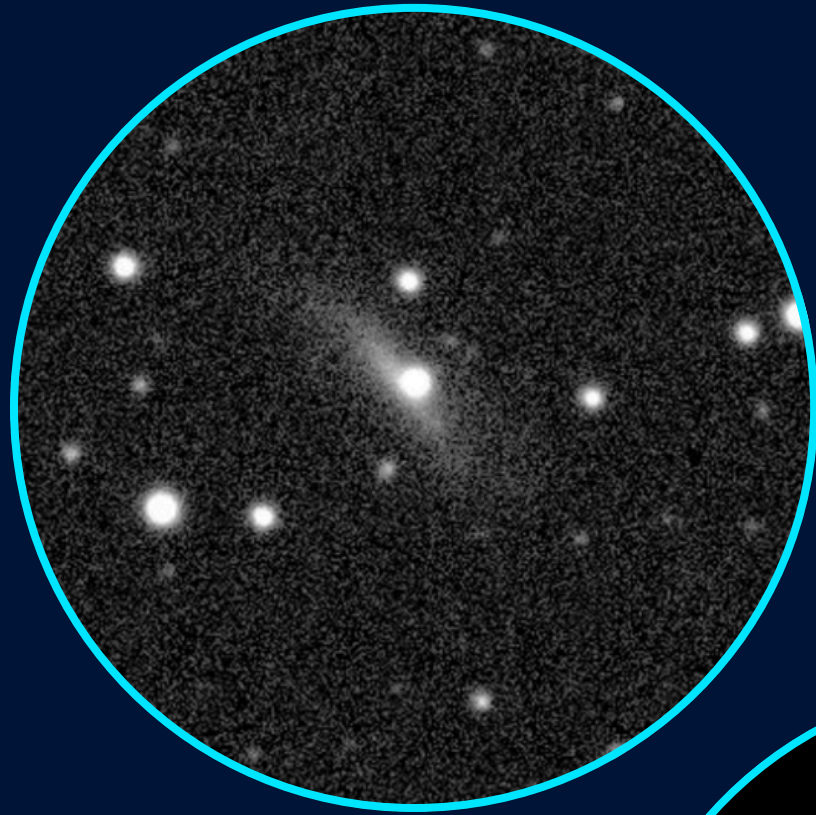
An advanced program granting us observation hours by the LCO Observatory. Initially we were granted about 20 hours of observation.



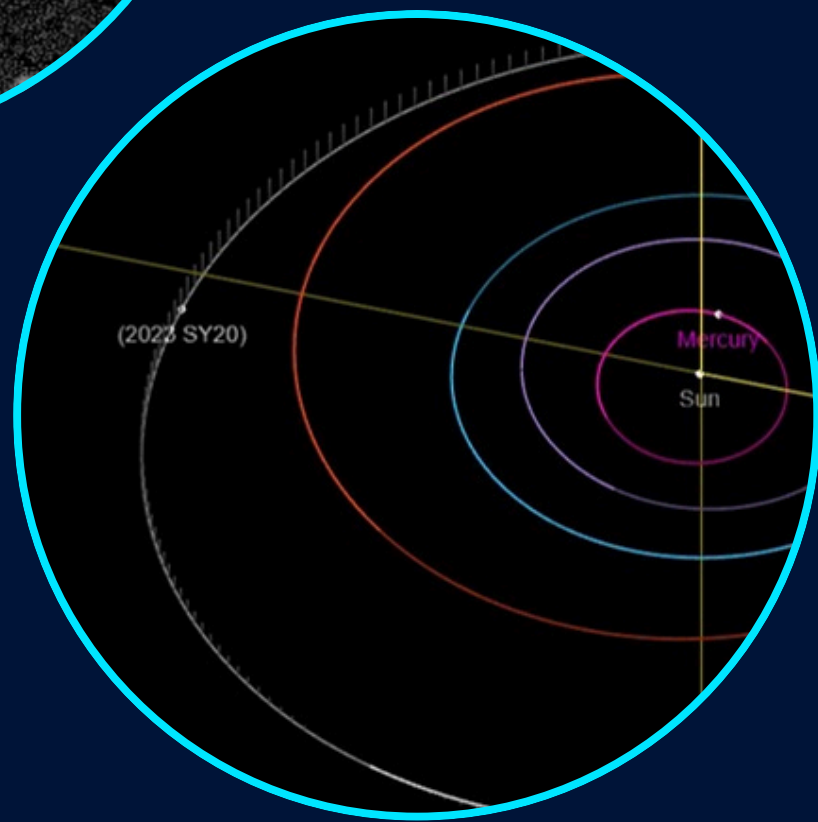
Training Programs

Conducted by UC Santa Cruz (CrEST, StS) and SSGI staff to adequately prepare students for rigorous scientific analysis.

Scientific Observations and Discoveries



SN2025qpk



2023 SY20

Confirmed Discoveries and Observations

These achievements by our student participants underscore that impactful scientific contributions result from coordinated public involvement.

The team successfully identified **asteroid 2023 SY20** through a collaborative survey with the PACS e-LAB, and achieved the confirmed follow-up observation of **supernova SN2025qpk** in the UGC 11622 galaxy.



Scaling Up Outreach

After fixing our internal management issues, we were able to significantly scale up the activities managed by the CSP.

We spearheaded extensive school outreach initiatives and training sessions specifically for the IASC Asteroid Search Campaign.

We utilized a blended model, implementing both virtual and in-person training sessions to maximize our demographic reach.

This built a sustainable pipeline of eager students ready to contribute to real-world science.



Technological Innovation

The CSP Management System

To eliminate our reliance on disjointed free tools, we developed a fully in-house, open-source portal designed specifically for tracking citizen science initiatives.

It allows us to easily import image sets from the IASC site, assign them, and track progress. It features a built-in chat and mailer integration, and has entirely streamlined the reporting and review submission process.



Technological Innovation

The screenshot shows the main dashboard of the ESSS Citizen Science project. It features a navigation menu on the left with options like 'Global Chat', 'Home', 'Asteroid Search', and 'Galaxy Zoo'. The main content area is titled 'Active Missions' and displays three campaigns: 'IASC March Campaign' (44 Hunters), 'IASC February Campaign' (39 Hunters), and 'IASC January Campaign' (7 Hunters). There is also a section for 'Practice image sets' with 33 Hunters. The interface is clean and modern, with a dark theme and clear typography.

This screenshot provides a detailed view of the 'IASC March Campaign'. It includes a 'MISSION MEMO' section with instructions for reporting and a 'Go Hunters!' button. Below this, there are four summary cards: 'TOTAL SETS' (12), 'ASSIGNED' (12), 'PENDING REVIEW' (0), and 'VERIFIED' (0). A table below these cards lists individual image sets with columns for 'IMAGE SET', 'STATUS', 'OBJECT DETECTED', 'HUNTER', and 'ACTIONS'. The table shows two rows of data for image sets p11-20260224_12_XY57_p11 and p11-20260225_11_XY56_p11, both assigned to hunters.

The 'Details' modal is used for reporting an object. It has two main sections: 'Objects' and 'Report (MPC Format)'. Both sections have a text input field and a 'Prefix Required: ESSxxxx' label. The 'Objects' field contains the example 'e.g. ESS0001, ESS0002'. The 'Report (MPC Format)' field is empty. To the right, there is a 'DISCUSSION' section with a message 'No discussion yet. Start the conversation!' and a text input field for 'Type a message...'. At the bottom, there is a green 'Submit Report' button and a rich text editor with bold, italic, and code formatting options.

The 'Team Management' page shows a list of active team members. It includes a search bar and filters for 'Volunteer', 'Moderator', 'Manager', and 'Admin'. The table below lists four users with their roles and performance metrics. The 'Active Team' count is 50.

USER	ROLE	ASSIGNED	VERIFIED	MANAGE
Bless Awoke blesawoke6@gmail.com	VOLUNTEER	1	1	Volunteer Volunteer
Fetih Girma fetih.girma@com	MODERATOR	6	6	Moderator Manager Admin
Biruk Tegene biruk.tegene@community.ethiass.org	MODERATOR	5	5	Moderator
Keku Getachew kgetachew39@gmail.com	VOLUNTEER	1	1	Volunteer

CSP Portal Git Resource



<https://github.com/huwadev/ESSS-CSP-Portal>



Future Development Roadmap

Diversify Projects

Deepening involvement in Zooniverse, securing more LCO observation time, and publishing academic papers.

Regional Synergy

Fostering active collaboration with regional African institutions on joint training and cross-border campaigns.

Expand Campaigns

Increasing citizen science engagements by actively expanding our campaigns and reach into more schools.

Scale the Portal

Expanding the open-source campaign manager to handle new projects beyond the IASC Asteroid Search.



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Questions?

Thank you for your time and engagement.

Kasane, Botswana | ESSS Citizen Science Project

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