

WTAT:Astro-truck Report
23 Nov 2012 - 12 September 2013

13th September 2013





Ernst Jordaan

Chris Arderne

Michael Kloos

Christo Rademan

Executive summary

The Astro-truck initiative aims to link up with existing community outreach programs in Africa as part of the WTAT. The Astro-truck is thus a vehicle to promote astronomy, science and education. The two target audiences are, the students on the truck and the public interacted with at the formal community outreach events. In order to achieve this, the equipment and support needed have been outlined. The IAU is in a position to provide the support needed to make this initiative a success. The proposal also describes the opportunities and advantages of the trip and what the initiative can provide to the IAU.

The project carried on back in South Africa, and is now coming to an end, a month shy of its start.

Contents

1	Introduction	1
1.1	Approach to outreaches in Africa	1
1.2	Teaching overview	2
1.3	Educational material	2
2	Zambia	3
2.1	Lusaka	3
2.2	Kasanka National Park	3
3	Tanzania	4
3.1	Korogwe rural school	4
4	Uganda	6
4.1	Kampala - school outreach	6
4.2	Kampala - Rotary meeting	7
4.3	Feedback	9
4.4	Lake Bunyoni - Hope Uganda Orphanage	10
5	Malawi	12
5.1	Nkata Bay - Chintheche Private Secondary School	12
5.2	Kande Beach - wood carvers	13
6	South Africa	14
6.1	Kayamandi - Kuyasa NGO outreaches	14
6.2	Karoo - stargazing and fossil hunting	16
6.3	Stellenbosch - stargazing and Samsara	18
6.4	AfrikaBurn	19
6.5	Stellenbosch - “Super” Moon	22

6.6	Stellenbosch - National Science Week	22
7	Personal reflections	24
7.1	Michael Kloos	24
7.2	Christo Rademan	25
8	Conclusion & acknowledgement	26

List of Figures

1	Michael (left) & Ernst at an early morning stargazing session next to the road in Zambia.	4
2	Three members of the Astro-team conversing with teachers at the school outside Korogwe, Tanzania.	5
3	Eager learners trying to answer a question.	7
4	Members of the Rotary Club in Kampala engaging in the different activities.	8
5	Children from the Hope Uganda Orphanage observing Jupiter.	11
6	Teachers and students from Chintheche Private Secondary School with Christo and Michael.	14
7	Chris helping the Kuyasa learners to assemble their Moon scopes.	15
8	The children of Kuyasa watching a video on the size of the universe.	16
9	The Biodiversity honours class at one of the excavation sites.	17
10	Ernst pointing at the Jewel Box to show to the funky Burners.	20
11	The Astro-tent where Ernst and Michael are collimating the Dobby.	21
12	Chris aligning the 12 “ Dobsonian to show Saturn to the public.	23

13	Auke Slotegraaf captivating the audience with his storytelling skills.	24
----	--	----

List of Tables

1	List of observed objects	29
---	------------------------------------	----

1 Introduction

This report simply outlines the activities and outreaches we did with the material and equipment provided by the IAU and Starwaders and shows what we achieved in our time.

The focus is the activities we were able to conduct while travelling through Africa, but the outreaches and enjoyment we had with the equipment and knowledge back in South Africa are also included. Many of the experiences in this report were recorded as personal entries, but entries we gladly share with the world.

1.1 Approach to outreaches in Africa

It was apparent from the start, after the Astro-truck broke down on Day 2 with a turbo problem, that our trip through Africa would be dictated by the diverging and converging powers of the universe. Whether these powers were in the form of very bad weather or roads washed away by floods – the universe prevailed. With this in mind the Astro-team knew from the start that we were going to go out and look for opportunities to take astronomy to the people. Apart from the few charity events organised as part of the Wilgenhof Trans Africa Tour it was up to the Astro-team to find institutions or in many cases enthusiastic people from the street to share the wonder of the universe. Many times, as Kevin Govender inspired us to do, we engaged on a total different level, like playing soccer with children or playing guitar for them and in return they would teach us some local songs and dances. Thereafter we had a common platform on which to build and do astronomy outreaches on. Nevertheless every experience and outreach proved to be worthwhile and a genuine experience. Many times the more effort it was to reach people the higher the reward - like when we had to hike to a school in Malawi to reach students from the remote villages.

1.2 Teaching overview

Most of the outreaches, apart from purely fun street astronomy observations and stargazing, were enhanced by a strong educational component. Christo Rademan is a passionate teacher who has a gift of stirring enthusiasm. He prepared simple lessons on basic physics, geography and astronomy which could be enjoyed by a diverse crowd. The mini lessons, usually succeeded by stargazing, was an important part of the outreaches to give people the opportunity to think and ask questions. The educational posters of our Solar System, the Solar System model and the glow-in-the-dark Earth globes was a crucial aspect to the visualisation of the physics, astronomy and geography lessons taught. The following sections include the essential parts of the knowledge, astronomy and experiences we could share during the past 10 months.

1.3 Educational material

The essential books, posters and information that enhanced our knowledge are listed below:

- Sky Guide 2012, A. Slotegraaf, Astronomical Society of Southern Africa, Observatory, Cape Town
- Sky Guide 2013, A Slotegraaf, Astronomical Society of Southern Africa, Observatory, Cape Town
- Astronomy within reach, 2012. N. Young, LAPA Publishers (Pty) Ltd, Pretoria
- Stargazing from game reserves, 2006. A. Fairall, Struik Publishers, Cape Town
- SAAO posters:
 - Light Spectrum

- Solar System
 - Starlore of Southern Africa
- SAAO summarised informations sheets on the Sun, Moon, Planets, Galaxies, Nebulae etc.

2 Zambia

2.1 Lusaka

Ernst Jordaan - 1 December 2012

After settling at a camp site outside Lusaka the evening sky looked promising. The moon was waning towards its last quarter and Jupiter and Sirius were very bright. Christo presented a small lecture around the camp fire on our universe. The universe poster came in handy and Ismail (our driver) reminded us were our Solar System is positioned in our Galaxy. We had a thorough look through the Dobby and could feast on the bands and Galilean moons of Jupiter. The sky became very smoggy but we managed to show Jupiter and its moons to Alfred and Caroline from the Zambian Broadcasting Commission. We told them more about Southern African star lore and gave them the Starlore of Southern Africa poster. They told us a similar story of the importance of isiLimela (Pleiades) as a signal of the coming of the growing season when preparations had to be made.

2.2 Kasanka National Park

Ernst Jordaan - 2 December 2012

The evening in the Kasanka National Park the WTAT grouped waited in wonder for the 8 million Fruit Bats to awake from their daily disposition to own the night. This wasn't far from the truth as these bats kept emerging

from the trees for more than 20 minutes to cover the sky from horizon to horizon until the stars took their place. We didn't know it then, but this was the most beautiful and ideal stargazing evening of the whole trip. The Astro-team and other members of the WTAT spend quite a while observing 47 Tuc, Tarantula nebula and the great Andromeda Galaxy. It was the perfect evening to conclude our time in Zambia.



Figure 1: Michael (left) & Ernst at an early morning stargazing session next to the road in Zambia.

There were many evenings like this where setting up the Dobby was part of setting up camp. We did not include all these days in the report – only the most memorable ones and the outreaches.

3 Tanzania

3.1 Korogwe rural school

Christo Rademan - 7 December 2012

The first school we stopped at was at a rural primary school outside Korogwe in Tanzania. It was a quick stop in which we distributed blow-up Earth globes, astronomy and physics posters, a few leaflets and a Galileo telescope. The kids were very excited and played football with the other guys on tour who were giving out soccer balls. Because our stop was just a quick one my friends and I went and found the principal of the school who spoke English.



Figure 2: Three members of the Astro-team conversing with teachers at the school outside Korogwe, Tanzania.

He showed us around the school and explained to us how their educational system works. The children were aged between about 5 to 12. Their classes included art, music, maths, sciences, English language and farming (which involved small scale agricultural practices). I had never seen a primary school that teaches kids how to farm for themselves. It seemed to be a very important skill in Tanzania because most families grew their own food.

Roads, vehicles and cash are rare in Africa. There are almost no smaller roads leading off the highways. In some parts of Tanzania the highways had very large sections of the road missing and were in desperate need of repair. This

makes it necessary for locals (most of whom don't own cars) to do their own farming as there is little fresh food in shops. After giving out our educational materials we explained to the principle that we were here to give a small helping hand by giving out some educational equipment that may help make his classes a little more exciting for the kids. He was very excited and listened eagerly to our explanations of the posters and other material. At the end of our visit he thanked us greatly for coming past his school and wished us luck on our journey.

4 Uganda

4.1 Kampala - school outreach

Christo Rademan - 11 December 2012

The next big outreach stop involved spending the whole day at a local Christian school just outside of Kampala in Uganda.

There we distributed some of our equipment and I gave my first class on astronomy. I tried to focus the lesson on how the Solar System works. The kids were very all keen to participate in the lesson and I encouraged them to ask questions. With a class of kids ranging from about 5 to 18 years old, I tried to keep the class' attention by getting their friends to hold up posters and by putting a few jokes into the lesson. The pastor that worked at the school helped as a translator for the kids to understand what I was saying. I learnt that even though the children might not be interested in space, they were at least getting exposed to some English which was far more beneficial.

In the end, the lesson was a great success and everyone was excited to try look through the telescopes. Unfortunately it was still daytime so all we could do was look at things relatively near to the school. Of course the kids were all under strict instruction and supervision not to look at the sun with the telescopes.



Figure 3: Eager learners trying to answer a question.

After the class I had kids come up to me and my friends to ask all kinds of questions about the solar system, the stars and how gravity works. It appeared as though we had sparked some genuine curiosity in their young minds. This gave me a great sense of satisfaction and pride.

4.2 Kampala - Rotary meeting

Chris Arderne - 11 December 2012

After a day spent teaching and enjoying the company of the children at the orphanage and primary school with entire WTAT group, we set off for a meeting with the Rotary Club of Kampala, and its very interesting members. The meeting was held on the premises of the current mayor of Kampala, Erias Lukwago.

We had a very successful evening, and learnt a lot about Rotary's activities in East Africa. The highlight was of course the 8" telescope, and even in the Kampala night sky, everyone was treated to a magnificent view of Jupiter.



Figure 4: Members of the Rotary Club in Kampala engaging in the different activities.

After a view lessons and explanations of our trip, we set out the posters, moon scopes and Galileo scopes, and did our best to keep everyone happy. There was so much demand for the Galileo scopes in particular that we had to negotiate some deals to keep the peace, but in the end everyone left very satisfied and hopefully with some new tools and knowledge to help them in their various projects.

Of notable importance at the meeting were:

- Peter Kasango, the head of the regional schools overseeing committee to whom we gave a number of posters and scopes, and who taught us a lot about the state of the education system in Uganda, and the areas that need particular attention.
- Augustine Ruyema, a senior lecturer in the Department of Electrical and Electronic Engineering at Kyambago University in Kampala. He was overjoyed with the Galileo scope we gave him, and promised to put

it to good use in some of his classes.

- Ben Waira, the associate governor for East African Rotary as well as on the board of advisors for Educate!, spend a lot of time explaining to us the main problems with science education in East Africa, and took a number of posters and things to use in schools.
- Robinah Bbomboka, Director/Principle of the Romasa College Mukono (private school).
- Ruth Mukasa, Science teacher at Kampala Secondary School.

4.3 Feedback

From Ben Waira:

“This is indeed to commend and thank you for the opportunity fellowship and service. The two day visit still is memorable - right from meeting the 43 member team at Shoprite, Lugogo, in Kampala.

Thereafter the few who made it to the Rotary Club of Bweyogerere - Namboole which meets close to Mandela National Stadium, proved a wonderful group. The presentation to the club on telescopes excited many that a good number of Rotarians committed the following day to attend the interaction session with orphans’ school and community. We commended and appreciated your team for the donation of footballs, teles and the lunch. The use of the telescopes taught to Rotarians and friends later on in the evening is invaluable.

Climaxing the visit with dinner at Red Chili’s cemented the relationship which will be built on even with other teams in future.

All the best,

Ben Waira”

From Peter Kasango:

“Dear Chris,

Thank you so much for the rather surprise mail. We are okay trying to push on the Rotary work. Rightly so we did not have time for a chat. Thank you once again for your interaction with the Children at our Church orphanage. They always remember the good time you had with them. Similarly thank you so much for the gifts you gave for the elderly towards their x mass, It enhanced the Clubs contributions. The members ultimately initiated another project resulting from the visit while donating the Xmas goods to the elderly. We have organized some solar lanterns to light their homes.

Regards & enjoy your selfless service.

Peter Kasango Mabuya”

4.4 Lake Bunyoni - Hope Uganda Orphanage

Michael Kloos - 14 December 2012

In mid-December the WTAT found itself on the shores of Lake Bunyoni in Uganda. The "Place of many little birds", as the name translates, is a truly spectacular location and just so happens to be the second deepest lake in Africa. It also happens to have a little orphanage called Hope Uganda situated close to its banks which holds a special place amongst the members of the Astro-Team.

It all started when Ernst, Chris, Gert and Lucas was summoned to the orphanage to see what the children were up to. The nursery children and some teachers performed some traditional dance for the group. In return Gert Streicher and Lucas van Niekerk entertained the crowd with some Bob Marley,



Figure 5: Children from the Hope Uganda Orphanage observing Jupiter.

Bob Dylan and Cat Stevens classics on the guitar. Chris and Ernst befriended Bennett and Isaac, two young locals. These two were orphans living at the orphanage. The Astro-Team spotted an opportunity for an outreach and started planning accordingly. On the first evening we decided to take the trusted ‘Dobby’ telescope to the kids and show them the night sky as they had never seen it before. The night turned out to be quite chaotic but fun with everybody jostling for a look through the telescope. We were lucky to have relatively clear skies and a good view of Jupiter and for a short while, the Orion Nebula. While most children were content to simply look through the telescope, a few inquisitive minds were intrigued and stayed behind to ask us questions which we answered to the best of our ability.

The following day Christo visited the orphanage to give one of his trademark lessons. This was necessary to give the children a deeper understanding of what they had seen the night before. Ideally we would have liked Christo to give his short astronomy lesson first and then bring out the telescope. Unfortunately this was not possible due to practical reasons at the time. Nevertheless

we did the best we could and offered the children a practical night-sky astronomy session coupled with a daytime theory lesson. That evening Ernst, Chris and Michael returned to the orphanage with an entirely different mission: to learn the art of cooking chapati. Chapati is a simple, versatile and tasty type of flatbread originating in India but widely eaten in East Africa. We were keen to learn how to make them ourselves and some of the caretakers at the orphanage as well as older children were willing to show us how. After buying the necessary ingredients as well as two clay ovens, we ventured to up the road away from the monotony of the camp site. What followed was an unforgettably enjoyable evening – truly one of the highlights of the WTAT!

First off we learnt to mix and roll the dough using an empty Coke bottle. Somewhere along the way a chapati-chant was born which kept everyone amused. The children found it especially hilarious when we tried our hand at this chapati business. After making enough chapati and mandaz (a type of banana vetkoek) to feed everyone we went outside to enjoy our feast. The children were so enthused that they started dancing, and all of a sudden a drum appeared and before we even knew what was happening everyone was dancing in a whirl of bodies!

What made this evening so special was the simple joy you get from connecting with other people. This was no charity event or outreach, but rather two groups of people both learning from each other and enjoying each other's company. One few other occasions did the Astro-Team have such an all-round positive experience with locals leaving everyone with a smile on their face.

5 Malawi

5.1 Nkata Bay - Chintheche Private Secondary School

Christo Rademan - 6 January 2013

The last school we visited was in Malawi. We found out from the locals about

a high school which we hitch-hiked to under the guidance of a local artist we befriended. After a brief encounter with some unhappy traffic officers we arrived at lunchtime break at the school. We then introduced ourselves to the principle. He was very welcoming and went to a lot of trouble to reschedule part of the students day to fit in our lecture.

The students were called in a little early from their break and I gave a short 30 minute class. In front of about 200 students I quickly came up with a lecture in which I explained how the solar system worked, how various telescopes work and Curiosity's mission to Mars. I tried to keep the focus on the advantages to getting a university degree and staying on to finish schooling.

I got lots of questions about studying different types of engineering and what opportunities there were. I unfortunately couldn't give any specific help as I was unfamiliar with what universities were available to students in Malawi. I did however give them advice on websites they could visit and programs I knew about in South Africa. They seemed particularly interested in the SALT telescope pamphlets we distributed, which showed images of what research people were doing.

5.2 Kande Beach - wood carvers

Ernst Jordaan - 6 January 2013

The students from the Chintche Private School and the local woodcarvers from the community surrounding our camp site, were invited to the evening's astronomy activities outside our camp site. The woodcarvers here in Malawi were also university students working for pocket money before going back to university. Many study engineering and it was exciting to relate on an educational level. The weather was not ideal and we could observe Jupiter, SMC and LMC as well as Tuc 47. Another phenomena that amused us as much as the telescope and stars seemed to intrigue our Malawian peers, was the thousands of fireflies in the cassava fields outside the camp. It looked like



Figure 6: Teachers and students from Chintheche Private Secondary School with Christo and Michael.

the field was alight with thousands of green moving LEDs and off course we had the immaculate star canopy overhead.

6 South Africa

6.1 Kayamandi - Kuyasa NGO outreaches

Michael Kloos - 20 February 2013 & 15 May 2013

Over the course of our first semester the Astro-truck team did two outreaches to Kuyasa NGO in Kayamandi. On both occasions Nomandla Bongoza, the manager at Kuyasa, summoned the aftercare children to stay later at the Kuyasa centre for some astronomy activities.

Although we had more time to prepare and present a better structured outreach, the first outreach at Kuyasa was a little chaotic with very enthusiastic kids. The children were all very welcoming and the teachers helped us to



Figure 7: Chris helping the Kuyasa learners to assemble their Moon scopes.

divide them into groups. About 60 children aged between 6-10 were divided into group of 20. Each group was given an activity.

Christo Rademan taught a class on our Solar System, some basic physics and geography. Geography was taught as the children were very interested in the glow-in-the-dark Earth balls we distributed. Michael Kloos and Chris Arderne got the children to assemble cardboard Galileo scopes which they later used to observe the Moon. Ernst Jordaan took charge of assembling the 8 inch Dobsonian telescope and went on to explain the orbit of the Moon whilst letting the children look at it through the scope.

Christo explained to the children that our Solar System has 8 planets and that we were able to observe them with the telescope. He did this by means of the faithful Starwaders Solar System model which survived the African journey. We learnt a lot from our first trip to the Kuyasa centre and on our second outreach we summoned some of the astronomy newbies who joined us at Afrikaburn to help. The model of the universe, sponsored by Mr. Neville Young from Starwaders, was used on the second outreach as well, and we ended up donating it to Kuyasa as a permanent display on the universe. We showed



Figure 8: The children of Kuyasa watching a video on the size of the universe.

the kids a video on the size of universe and a video on Saturn. This kept the kids excited and gave a much better visual explanation of what we tried to explain on our first outreach.

6.2 Karoo - stargazing and fossil hunting

Ernst Jordaan - 23-29 March 2013

Each year the honours class of the Biodiversity Department at Stellenbosch University sets off for a week long fossil hunting expedition in the Karoo. We all know what wonderful night skies the Karoo presents and I didn't think twice when the opportunity arose to join the group of 20 students and palaeontologist Jurie van den Heever.

The aim of the week was to go through the geological layers from the Cape Supergroup, Dwyka, Ecca and finally the Karoo layer to find fossils. Being a biodiversity group of students the focus was on the evolution of different plants and animals dating back from the Ordovician period (500 million years ago) to the Triassic period about 250 million years ago. (As an amateur astronomer

I could boast that I could point out stars much older than this).



Figure 9: The Biodiversity honours class at one of the excavation sites.

The weather was superb and the observation conditions even better. Unfortunately there was not space for the 8 “ Dobby but I managed to squeeze in two Galileo scope to assemble during the week.

The Milky Way was clearly visible every evening and around the campfire there was a lot of science talk about evolution and the age of the universe. I had the opportunity one evening to share some of my experience on the Astro-truck quest and the group found the Southern African starlore very interesting. In the evenings we would just relax around the campfire and identify unfamiliar constellations with some cool astronomy apps. The group of young scientists were very enthusiastic and it was fun to have more intellectual discussions about science and astronomy in general.

On our second last evening we stayed in the hostel of Merweville Primary. The school is a home for children from Cape Town coming from troubled households where they can't be taken care off. After the morning fossil excavation session we played cricket with the boys from the hostel. With the addition of more

astronomy enthusiasts from the week we split the group of 30 children in two groups – the one group had their turn to try and accomplish the not so easy task of observing Jupiter with a Galileo scope while the other group had a tour of the night sky. The children were taught how to find South with the Southern Cross. The children found the legend of the Khoisan girl who threw the roots and ashes into sky to create the Milky Way, very amusing. Many kids asked about shooting stars and I explained that a meteor is a dust particle (like a grain of sand) that enters the Earth's atmosphere and usually burns out before it reaches Earth.

The children knew about SALT and the SKA but it was getting late and they had to go to bed. I gave Annemarie Kroon (the matron) a few copies of the Mission Meerkat comic so she could share with them the astronomical significance of small towns in the Karoo like theirs.

I also presented them with the two Galileo scopes the Biodiversity class and I assembled earlier the week. I was informed that they had a fully equipped computer lab and that are avid learners so I gave Annemarie a Starwaders CD sponsored by Mr. Neville Young with Stellaruim and educational games regarding astronomy to play around with.

I once again had the privilege of sharing the beautiful night sky with a diverse group of people under the best South African skies one could wish for.

6.3 Stellenbosch - stargazing and Samsara

Ernst Jordaan - 14 April 2013

Two weeks before Afrikaburn in the true burning spirit we decided to have a multi-cultural warm-up event. The idea was to make it an open event were anyone invited could invite other people and bring something to share.

The evening started by gathering at the Pulp Film Society at 21h to watch the latest Ron Fricke film Samsara (2011). This is a universal unbiased film consisting of mostly time lapse scenes (some astrophotography time lapses) of

all over the world. The film is unbiased in the sense that it doesn't propagate any belief, religion, politics or even science – it is a film about the beauty of the people and places of the universe.

The film society is a great gathering place and after inviting more people we got on our bicycles and headed for the Hangbrug soccer fields out of town. There are always Full Moon cycles which isn't ideal for stargazing so it was decided to make this a new moon cycle for the sake of good stargazing.

The turnout (15 people) was surprisingly good for a very chilly evening and we got the fire started and enjoyed tea, cookies, oranges and whatever there was to share. The night sky to the South was exceptional and Omega Centauri, Jewel Box and Alpha & Beta Centauri and the Coal Sack could be observed to its full glory. Saturn, as always, was an impeccable observation and Scorpius beautifully emerged from behind Simonsberg later the evening. The Astro-team shared some of their stories from Africa and explained how the find South with the Southern Cross. We also pointed out the difference between open clusters (Jewel Box) and the Omega Centauri – the king of globular clusters. Luckily the firewood lasted and 3 of us observed till 4h30 that morning to try and get a glimpse of the Eta Carina region.

This was a most enjoyable evening were astronomy, once again, connected us with many people from different walks of life.

6.4 AfrikaBurn

Michael Kloos - 1-6 May 2013

After much planning, packing and anticipation for the open road, Michael, Chris and Ernst finally found themselves hurtling towards AfrkaBurn. On-board were Galileo- and moon scopes, an assortment of oddments and survival needs, some IAU pamphlets and flyers and of course our star-performer Dobby – the 8" telescope! All was set for a wonderful week in the clear, clear skies of the Tankwa Karoo.

After arriving at AfrikaBurn we promptly began the setting up of our camp which we aptly named the Astro-Tent. Over the course of the day the host of interesting characters and friend we had invited joined us in our astronomy-themed camp. We made an effort to keep our little dwelling as open and welcoming as possible to any passer-by. We wanted people to wander in, especially when we had the doobby out, so that they could chance upon a night-sky adventure.



Figure 10: Ernst pointing at the Jewel Box to show to the funky Burners.

Upon our first use of Dobby Jupiter was a bit hazy which made us realise that we needed to collimate the mirrors. The following morning Ernst and Michael spent quite some time attempting to set Dobby right again. The manual proved very helpful here and after a couple of hours we had done the best job we could. That evening we did some more star-gazing just outside our camp and were joined by some curious neighbours. We observed Jupiter again that evening, as well as Orion's Nebula and the magnificent 47 Tucanae. On the Saturday evening the Astro-Team decided to broaden their horizons and do some "street astronomy" in Tankwa Town. This is the name given

to the temporary settlement created by the participants of AfrikaBurn. We set up the Dobby in the Binnekring road which loops around the central open space at the heart of Tankwa Town. The Binnekring sees hundreds pedestrians constantly and thus it was the perfect spot for us! Saturday evening turned out to be a beautifully clear night with the Milky Way looking like some kind of stellar highway. Passers-by had the chance to observe Omega- and Alpha Centauri, our trusty favourite Jupiter and the Jewel Box. Michael also did some fire-staff dancing nearby which attracted some onlookers who were then sucked in to the delights of the Dobby!



Figure 11: The Astro-tent where Ernst and Michael are collimating the Dobby.

Overall AfrikaBurn was a success for the Astro-Team. We managed to give many people the chance to look through a telescope and answered a number of questions to the best of our ability. People were interested in what we had to offer and appreciated our effort. The Astro-Tent idea was a worthwhile and interesting endeavour which we all very much enjoyed.

6.5 Stellenbosch - “Super” Moon

Ernst Jordaan - 23 June 2013

Events like the “Super” Moon always seem to draw public interest. I was invited to set up the Dobby outside Stellenbosch, on a farm called Savoya. The Moon being at perigee was merely an excuse for people to gather but the celestial objects soon became the centre of the party. Conditions were clear and we had some good observation time of Venus and Mercury before they set. There were a lot of photography fanatics with DSLR cameras and we managed to get a good time lapses of the Moon rising behind Stellenbosch mountain. There were around 30 people from a working class crowd, some in their forties, who has never observed through a telescope. To them this was simply fantastic and even though observing conditions are difficult with a full Moon, the Moon filter helped a lot.

6.6 Stellenbosch - National Science Week

Ernst Jordaan - 1 August 2013

As part of the National Science Week fellow astronomers Auke Slotegraaf and Ed & Lynette Foster organised a jam packed week full of public street astronomy outreaches in the Western Cape. The Astro-team joined them for the Stellenbosch event on Thursday 1 August.

The commitment of the Slotegraaf and Foster team didn’t disappoint and the public was in for a treat with two Dobsonians (12 “ & 16 “) and a Celestron reflector projecting objects on a screen. The Astro-team joined with their meek 8 inch Dobby, some posters, flyers, their experience on the Astro-truck and helped to set up in the parking lot of the Eikestad Mall.

Observing conditions were not ideal with the light pollution from nearby street lights but we managed to set the telescopes up strategically to have clear views of the most significant objects.



Figure 12: Chris aligning the 12 “ Dobsonian to show Saturn to the public.

The evening started off slow but soon picked up momentum and over 200 people were counted signing the register book. Everyone had their hands full manning telescope to point out Saturn, Omega Centauri, Alpha Centauri, Jewel Box and Messier 4 in Scorpius. Auke and Ed entertained many with their knowledge of the universe. The public had the opportunity to search for an object with the Go-To on the Celestron and print a picture of the object. Members of the Astro-team once again shared their Astro-truck experience and how the IAU, SAAO and NRF collaborates to promote science through astronomy over the world and especially Africa.

The beauty of a public street astronomy evening is the inclusiveness of such an event. Everyone is attracted by the gathering of people, colourful posters and missile like objects people seems to queue for. Such events not only attract the regular passers-by (families, students) but also car guards, homeless people from the street, other public servants such as the SAPD and Campus Police. The environment is encouraging for people to share their beliefs and knowledge and to ask questions about any related astronomy or science topic.



Figure 13: Auke Slotegraaf captivating the audience with his storytelling skills.

The evening didn't want to come to an end with the public keeping us busy till around 23h30. To conclude Auke shared the beautiful Nama tale of Pleiades, the daughters of the sky god, and their poor husband (Aldeberan) in a cath 22 situation not daring to return home without any game after and not able to retrieve his arrow (Orion's sword) in fear of the fierce lion (Betelguese).

7 Personal reflections

7.1 Michael Kloos

The WTAT-Astrotruck was a very interesting and rewarding experience for me. I was able to learn a great deal and pass on some of that knowledge to other people from all walks of life. Travelling and visiting completely new places coupled with excellent stargazing made for an intense nine weeks of my life.

Before we left on the tour, I did not have much astronomical experience but

what I did have was enthusiasm. I had never seen the night-sky through a telescope! For me the fact that we could get a telescope sponsored by the IAU was a dream come true and it inspired me to further develop my astronomical interest. What followed over the next nine weeks was a flood of new knowledge and skills regarding star-gazing. I can now look up at a starry sky on a dark night with familiarity and an increased sense of wonder.

I used this enthusiasm to try and inspire the people we came into contact with on the WTAT. I was able to show people the night-sky in a way they had never seen before with the aid of the telescope which was wonderful. From young children to University Professors, we were able to connect with a large diversity of people. It is my hope that we managed to excite some of our contacts enough to spur them on to further their astronomical interest and maybe even career.

Astronomy is not one of the oldest sciences for no reason – the heavens have always fascinated humans. Spending nine weeks kindling this fascination throughout Sub-Saharan Africa was the experience of a lifetime. I am very excited to continue my own astronomical education and to be a factor in the scientific stimulation of others.

7.2 Christo Rademan

My journey through sub-Saharan Africa was eye opening. I did not expect the experience to have any impact of my view of the world. It taught me that the world is a lot smaller than I thought. That you can reach anyone, anywhere, if you just keep going. Above all, it showed me how beautiful and harsh Africa is, what the people need and how much opportunity there is for growth and development.

I had a great time teaching people and explaining what I know about the universe. I read two books of astronomy during our two month trip and have found I still have a great passion for space exploration. I learnt a lot about

mathematics, physics, star constellations, how to teach, ethnic beliefs, African educational systems, politics and, most of all, people skills and friendship building. I would like to thank our sponsors for the equipment they gave us. We had limited space to carry extra stuff, but that which we brought on tour was received by many grateful hands.

I learnt that teaching children is an effective and fun activity to do, but the key to actually passing on information that will be learnt is to teach the teachers. I found that they were often the ones that would come forward and ask about a wide variety of topics (from global warming to the size of the universe) which they did not fully understand. I found out that in talking to the teachers, we were able to have a much deeper and longer lasting effect on helping the school.

I thoroughly enjoyed doing the outreaches and have learnt a lot about the culture and requirements of the children and teachers that lived in the slums around Stellenbosch.

8 Conclusion & acknowledgement

The Astro-truck initiative undoubtedly reached their proposed goals and surpassed their intentions of the planned outreaches on the WTAT. Apart from the more than 450 people reached during the challenging two months in Sub-Saharan Africa, members of the Astro-team went on to do an outreach every month from February to August (July was the exception with university holidays). In this time they reached another 450 people - all from very different strokes of life. A list of objects observed and a list of activities, accounting for the number of people and hand-outs, during this time is depicted in Table 1 and Table 2 at the end of this document.

Chris, Michael, Ernst and Christo would like to thank the IAU & Starwaders for everything they made possible. Their enthusiasm and immediate support

was crucial for the success of the initiative. The 8” telescope was a truly magnificent addition to the WTAT and joined us on some amazing adventures. Furthermore, the Moon scopes and Galileo scopes meant we could leave something behind that could help out any budding astronomer. The Solar System model was crucial in most outreach activities and the Starwaders CD provided lots of educational material and software to engage inside the classroom. Finally the extensive range of educational material provided to us was a brilliant hand-out at all of our events. We hope that the IAU’s posters and pamphlets are still in circulation today in all the places we visited.

A special thanks to the following people who believed in our quest; for their encouragement that made a success of the Astro-truck initiative:

- Kevin Govender for his inspiration and giving us the go ahead from the IAU.
- The exceptional team and individuals from SAAO/IAU -Sivuyile Manxoyi, Laure Catala & Nuhaah Solomon- for organizing the equipment and getting it delivered on time.
- Auke Slotegraaf for watering the seeds of the Astro-truck initiative.
- Neville Young for his generous donation of fun and helpful educational material.
- Nomandla Bongoza at Kuyasa who was always willing to help facilitate an outreach in Kayamandi.

While we travelled Africa teaching and spreading the joy of astronomy, it can safely be said that no one learnt as much as we did. We are deeply grateful for this experience.



Table 1: List of observed objects

#	Deep sky objects	Constellations	Planets, stars & other
1	47 Tuc, NGC 104	Andromeda	Jupiter + moons
2	SMC	Auriga	Mercury
3	LMC	Aries	Venus
4	Orion Nebula, M42	Canis Major	Moon
5	Tarantula, NGC 2070	Canis Minor	Saturn
6	Coalsack	Crux	
7	Jewel Box, NGC 4755	Eridanus	Achernar
8	Pleiades, IC 2602	Gemini	Aldebaran
9	Andromeda Galaxy	Musca	Rigel
10	Messier 4	Orion	Bellatrix
11		Pegasus	Betelgeuse
12		Scorpius	Canopus
13		Sculptor	Sirius
14		Taurus	Acrux
15		Triangulum	Antares
16			Fomalhaut
17			Castor
18			Pollux
19			Altair
20			Procyon
21			Alpha Centauri A & B
22			Beta Centauri
23			
24			Geminids meteor shower

Table 2: List of activities

Date	Event	Country	People attended
Nov '12 – Jan '13	Astro-truck learners	Namibie, Zambia, Tanzania, Uganda, Malwai	40 students 4 drivers
2 December '12	Lusaka Camp	Zambia, Lusaka	10+
7 December '12	Rural Primary School outside Korogwe	Tanzania, Korogwe	60 children aged 5-12 years
11 December '12	Christian School	Uganda, Kampala	80 children aged 5-18 years
11 December '12	Rotary Club Kampala	Uganda, Kampala	20 people
14 & 15 December '12	Hope Uganda Orphanage & Nursery	Uganda, Lake Bunyoni	20 orphans aged 3-16 yrs +10 children aged 3-9 yrs
6 January '13	Chintheche Private Secondary School	Nkata Bay, Malawi	200 high school pupils
6 January '13	Wood carvers outside camp	Kande Beach, Malawi	20 woodcarvers, mostly students 18-22 yrs
20 February '13	Kuyasa Kayamandi outreach 1	Kayamandi, Stellenbosch, WC RSA	60 children 3 teachers
15 May '13	Kuyasa Kayamandi outreach 2	Kayamandi, Stellenbosch, WC RSA	25 children 3 teachers 5 volunteers apart from Astro-team
23-29 March '13	Fossil hunting & stargazing – jewels of the Karoo	Fraserburg & Merweville, Northern Cape, RSA	20 B.Sc Honours students 30 children aged 5-12 yrs
14 April '13	Samsara>New Moon Cycle>Stargazing	Jonkershoek, Stellenbosch	15 students
1-6 May '13	Afrikaburn	Tankwa Town, Tankwa Karoo	20+ people staying at Astro-tent 40+ passers-by
1 August '13	National Science week	Eikestad Mall Parking,	200+