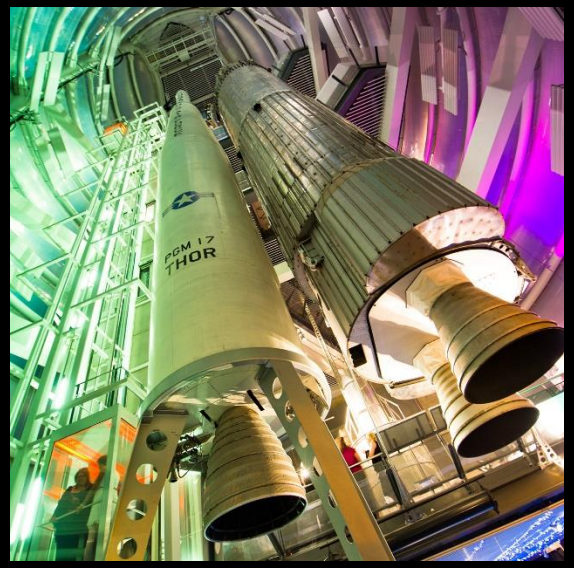
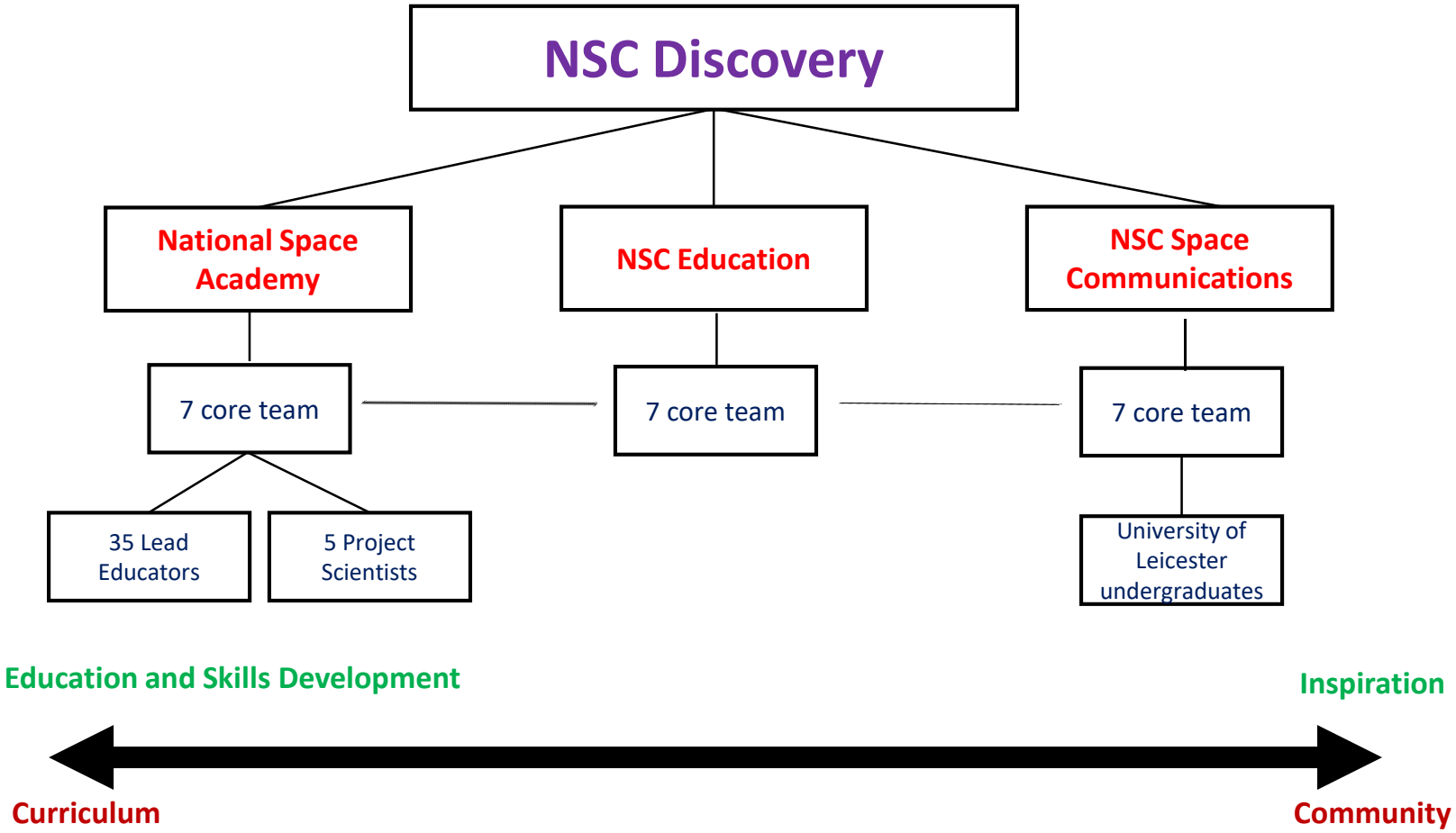
Lincoln College Group 2021 – the UK National Space Academy

Professor Anu Ojha OBE

- Director (NSC Discovery), National Space Centre
- Department of Physics and Astronomy, University of Leicester
- STFC Council
- ESA Human Spaceflight and Exploration Science Advisory Committee

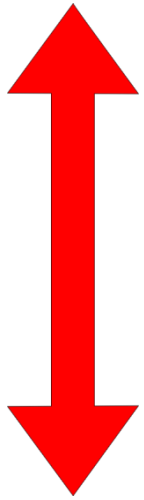

PGM 17
THOR

NATIONAL
SPACE
CENTRE
WELCOME
www.familyadventureproject.org


NSC Discovery
National Space Academy
NSC Education
NSC Space Communications
7 core team
7 core team
7 core team
35 Lead Educators
5 Project Scientists
University of Leicester undergraduates
Education and Skills Development
Inspiration
Curriculum
Community

Skills development in a strategic sustainable framework – the NSA

Education and Skills



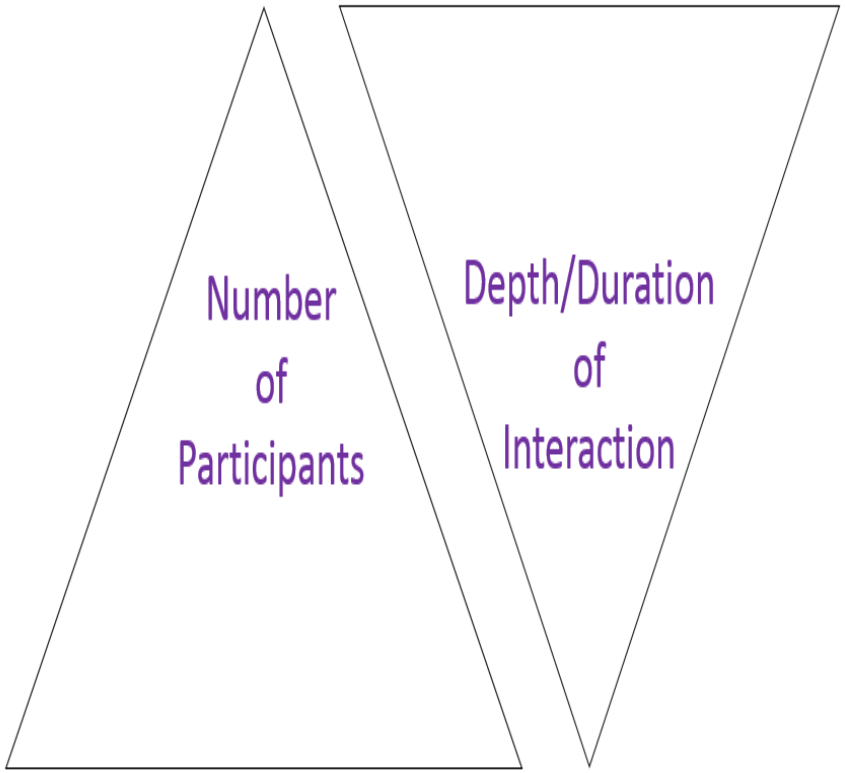
Inspiration

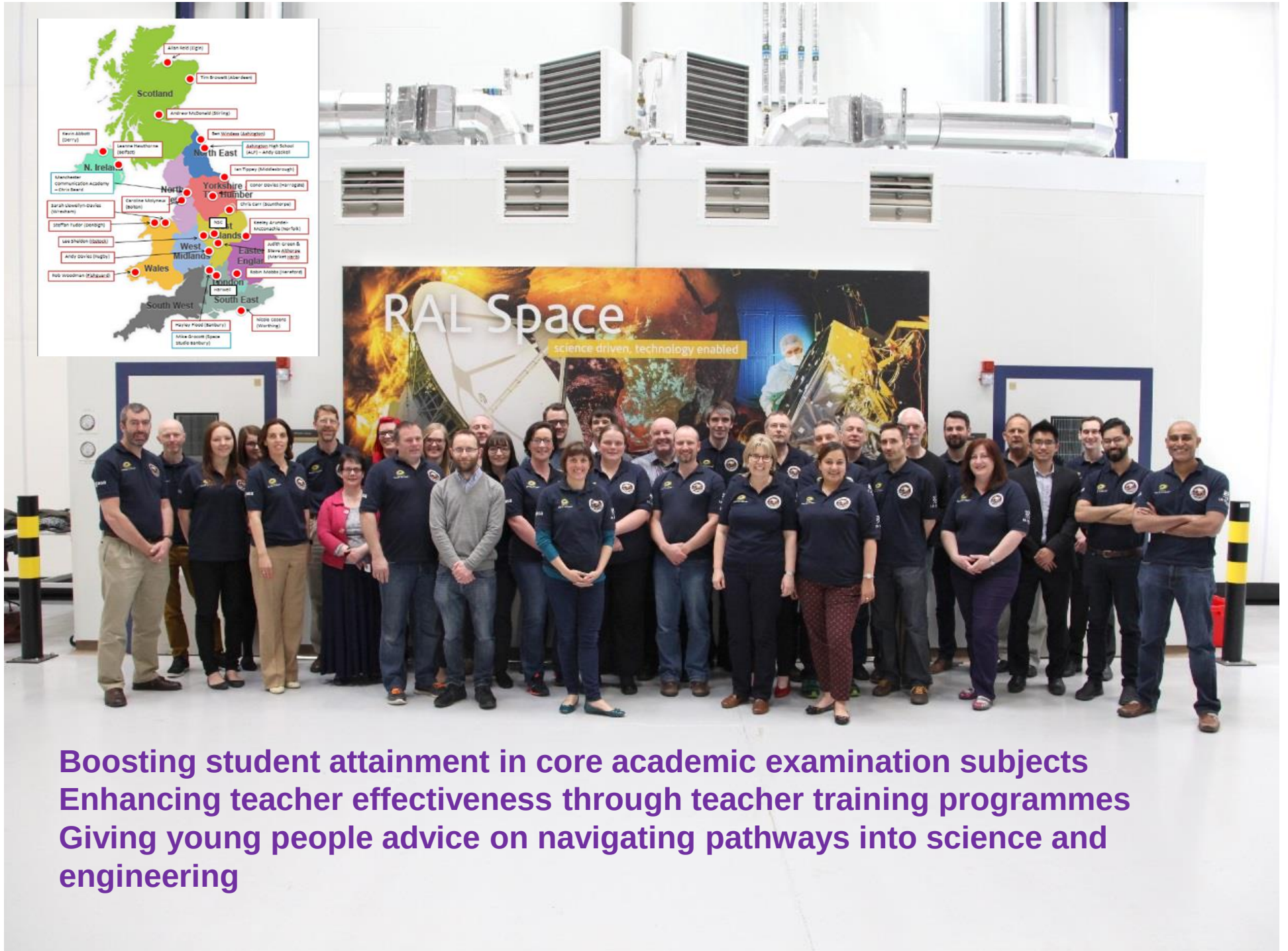
Undergraduate level programmes for space industry employees – HIGHER APPRENTICESHIPS IN SPACE SECTOR

Secondary school GCSE and A Level programmes (full-time) – Space Engineering, Space Studio Schools

Secondary school support programmes (ages 11-19) – Science, Technology, Engineering, Mathematics - students and teachers

Primary school support programmes





Boosting student attainment in core academic examination subjects
Enhancing teacher effectiveness through teacher training programmes
Giving young people advice on navigating pathways into science and engineering

The NSA since 2011

- Student masterclasses (secondary) – 57 000
- Continuing Professional Development for Teachers -6000+ UK teachers and 1000+ international teachers
- Careers conferences for high school and undergraduate students
- International contract work for ESA Education, CNES, Norwegian Space Centre, European Union, UAE Space Agency, China (various)
- Developing in-flight experiments for ESA astronauts – Cristoforetti, Peake, Pesquet
- 250+ full-time high school students on Space Engineering and Space Studio School courses
- Skills/Training and exploration lead for UK-China space collaboration and UK strategic support for Gulf states' space sector skills development programmes

英国中学数理化大师班教学观摩活动

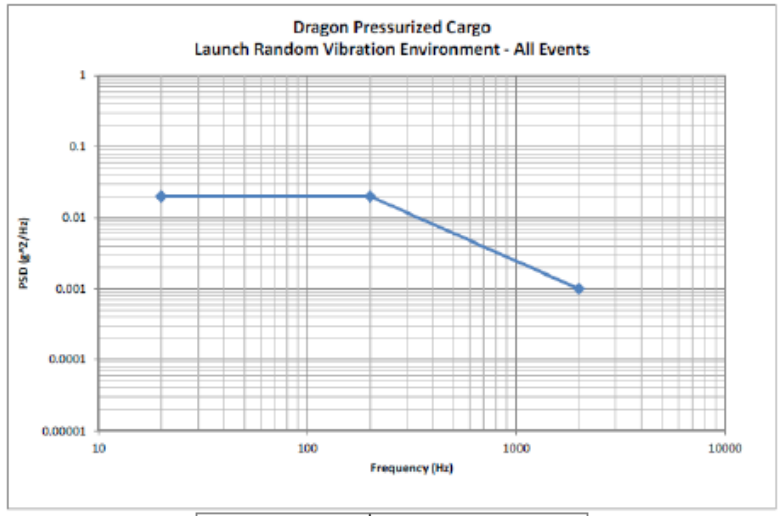
2016首届中英
科学教育研究活动周

NATIONAL
SPACE ACADEMY
UK Science
& Innovation
Network
The Sino-UK Collaboration on
Space Science Education
中英空间科学教育合作
nationalspaceacademy.org
esa
CATAPULT

逐梦航天
合作共赢
Pursue space dream for win-win cooperation
4·24
2019年中国航天日
SPACE DAY OF CHINA
中国航天日微信公众号

2019 中国航天大会
国际青少年航天教育论坛
International Youth Space Education Forum

https://astroacademy.org.uk/



Frequency (Hz)	Dragon Pressurized Cargo Launch Vibration MPE - All Events (Rev11) - All Axes [g^2/Hz]
20	0.02
200	0.02
2000	0.001
GRMS	**3.2**
Duration	**60 sec/axis**

Random Vibration (LAUNCH – All Events)

Notes:

1. This random vibration environment applies for items hard-mounted to racks. Items soft-mounted with straps and/or foam will have a lower environment.
2. Duration covers liftoff, ascent, Mvac burn, and reentry (abort).

Figure 1: Random Vibration Specification Used in Testing

Figure 7: CTB Mounting Hardware Attached to Fixture on Slip Table (X axis configuration)

Figure 8: CTB Attached To Fixture on Slip Table (X axis configuration)

FLIGHT SAFETY CERTIFICATE

I. Certificate Number – *Unique alpha-numeric identifier provided by the Cargo Item Provider.*	SPX7/ESA/TR1OP1/EPOPk-CVD-1

II. Cargo Item Provider – *The Cargo Item Provider is either the IP which owns the cargo or is the IP sponsoring the cargo on behalf of its nationals which own the hardware.*

☐ NASA ☐ FSA ☒ ESA ☐ JAXA ☐ CSA

III. Cargo Identification – *Official nomenclature and part number of the cargo item.*

Cargo Item Name *(Use an attachment for more items)*	**Part Number / Configuration Item No.**
For Classroom Video Demonstrations Items	
see attached item list	

IV. Transportation Safety Requirements – *The check marks below define the transportation vehicle(s) which will be used for the upload/download of the cargo item(s) together with the Process and Technical Safety Requirements which have been made applicable to the subject cargo item(s).*

Transport Vehicle	**Process Requirements**	**Launch Requirements**	☐**Return** ☒**Disposal Req.**
		Category: ☒1 ☐2	Category: ☒1 ☐2
☒ **Dragon** ☐ **Cygnus**	☒ SSP 30599 ☐ SSP 50146	☒ SSP 50021* ☐ SSP 51700*	☒ SSP 50021* ☐ SSP 51700*
☐ **Progress** ☐ **Soyuz**	☐ SSP 50146	☐ П32928-103	☐ П32928-103
☐ **HTV**	☐ JSX-2008041B (upload) ☐ JSX-2009059A (disposal)	☐ JMR-002B	☐ SSP 50021 ☐ SSP 51700
☐ **ATV**	☐ ESA-ATV-PR-13830	☐ ESA-ATV-1700.7b	Not Applicable

V. Operations/Stowage Safety Requirements – *the check marks below define the foreseen on-orbit operational/stowage location and the Process and Technical Safety Requirements which have been made applicable to the subject cargo item(s).*

ISS Segment	**Process Requirements**	**Stowage Requirements**	**Operations Requirements**
		Category: ☒1 ☐2	Category: ☒1 ☐2
☐ **NASA** ☐ **JAXA** ☒ **ESA** ☐ **FSA**	☐ SSP 30599	☒ SSP 41168 (Columbus) ☐ Choose Additional Document ☐ Choose Additional Document ☐ Choose Additional Document	☐ SSP 51700 ☐ SSP 41165 (JEM) ☒ SSP 41168 (Columbus) ☐ Choose Additional Document

LIVE
T+ 00:02:11
CRS-7 TELEMETRY
SPEED
ALTITUDE
04052
km/h
38.4
km
UPCOMING
MECO
MAX-Q
FALCON IS CURRENTLY EXPERIENCING MAX-Q OR MAXIMUM DYNAMIC PRESSURE. THIS IS THE POINT WHERE THE LARGEST AMOUNT OF AERODYNAMIC STRESS IS EXERTED ON THE VEHICLE
LAUNCH: CRS-7
SPACE LAUNCH COMPLEX 40, CAPE CANAVERAL, FLORIDA, EARTH
GO/NO-GO POLL
DRAGON INTERNAL
STARTUP
PITCH KICK
MECO
NOSE JETTISON
DRAGON DEPLOY
TERMINAL COUNT
STRONGBACK LOWER
LIFTOFF
MAX-Q
SES-1
SECO-1
SOLAR ARRAY
SPACEX

Plan B: 2nd Sept 2015

INTERNATIONAL
SPACE STATION
esa
COLUMBUS
CONTROL CENTE
COL FLIGHT

All 50 analysed video datasets, 6 teaching films, full teacher guides and tracking software and linked files available at www.astroacademy.org.uk

NATIONAL SPACE ACADEMY
One Earth
One humanity
Education brings us all together

NATIONAL
SPACE ACADEMY
One Earth
One humanity
Education brings us all together
ITCCC
60