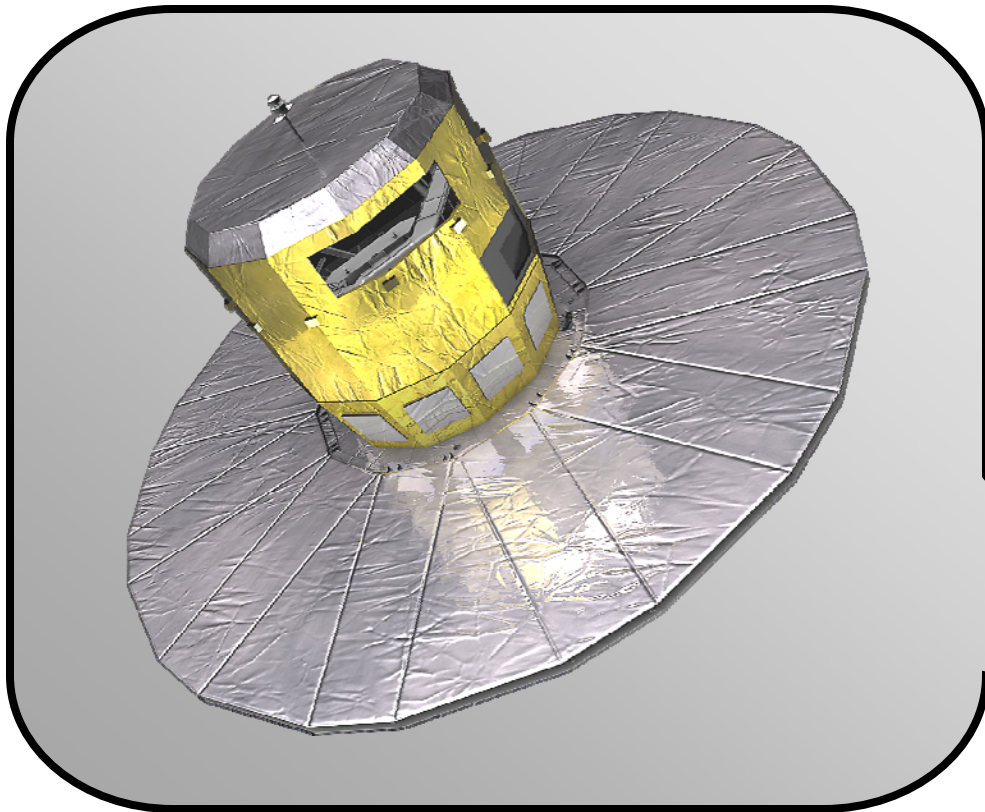


# LA DIVULGACIÓN DE GAIA EN ESCUELAS E INSTITUTOS



**J.M. Carrasco**  
& UB team

III Reunión Científica de la REG, Sitges 23-25 enero 2013

# GAIA: A BIG OPORTUNITY TO TEACH ASTRONOMY

- The Galaxy: populations, motions, spiral arms, number of stars, ...
- Stellar Evolution and type of objects
- Solar System Objects
- Space technology: launcher, satellites, ...
- History of astrometric catalogues
- Distance ladder: parallaxes, magnitudes, ...
- Gravity laws, Relativity, microlensing, ...
- Astronomy in your country and in Europe
- Statistical tools and computers



# THREE IMPORTANT DATES

- **Gaia launch (September 2013):**  
What is Gaia? Why? How? When? Who? Where?  
Spread the information: websites, social networks, videos, talks, press notes, pictures, ...
- **First data arriving:** Explain new results, science alerts. Comparison with Hipparcos data?
- **Gaia catalogue:** Explore the catalogue and do some science with it. How is the Galaxy? Data for planetariums.



# WE DO IT ALMOST FOR FREE

- Outreach is **very important** to be done for kids and young people: They are the future astronomers (and/or sponsors)
- ...but it is usually **not funded** (resources & staff needed)
- We need to prepare contents adapted to **different levels** (primary, high school, university) and in different **formats** (videos, documents, games, languages, ...)
- Very **few time** to prepare all this new material

**→ IMPORTANT TO SHARE MATERIAL**  
(bigger things could be done)



# EDUCATIONAL RESOURCES IN REG TWIKI



gaia

<https://gaia.am.ub.es/Twiki/bin/view/RecGaia/DivulgaEsc>

## RecGaia

Comisiones  
Grupos de Trabajo  
Lista de miembros

Reuniones REG  
- III Reunión Sitges  
Workshops

La REG en:  
- GREAT  
- Gaia ESO Survey

Divulgación científica

Jobs & Fellowships  
Circulares  
Documentación

Gaia en la web

Red Gaia-Francia

Hola [Josep Manel Carrasco](#)

[Cerrar sesión](#)

- Crear una recuadro adicional personal

TWiki > [Web RecGaia](#) > [DivulgacionCientifica](#) > [DivulgaEsc](#) (08 Jan 2013, [JosepManelCarrasco](#))

## Gaia en centros educativos (primaria, secundaria, universidad, ...) (Responsable: J.M. Carrasco)

Esta página centraliza todas las actividades divulgativas y material realizado para centros educativos (sean de primaria, secundaria o universitarios).

### Material disponible

Esta sección contiene material específico para centros educativos, adaptado a los diferentes niveles (ver también [Material disponible sobre Gaia](#)):

#### Primaria

- [Los minilibros de Gaia en castellano](#)

#### Secundaria

- [La maqueta de Gaia](#) (diseño anterior a 2006)
- [El globo celeste visto por el satélite Hipparcos, antecesor de Gaia](#)

#### Universidad

- 

PLEASE,  
CONTRIBUTE!

### Propuestas e ideas

- [GAP-Outreach-AO.pptx](#): Charla Xavi Luri en ESTEC describiendo el paquete de divulgación de CU9
- [OutreachGaia.pdf](#): Propuestas de divulgación de J.M. Carrasco para la reunión en ESTEC de GAP

### Charlas y conferencias impartidas

Si vas a dar una charla sobre Gaia en un centro educativo o tienes material para compartir, contacta con nosotros para añadirlo en esta sección.

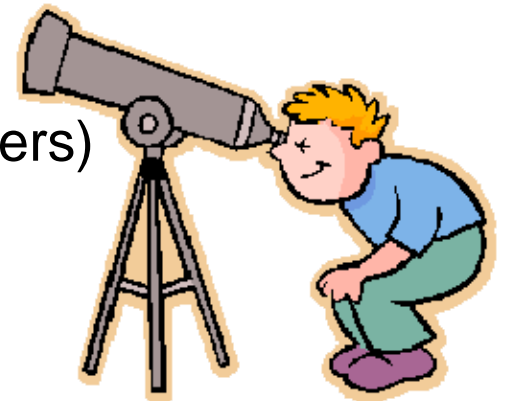
[Archivos adjuntos](#)



# SOME IDEAS

SHARE YOURS AND OFFER  
TO PARTICIPATE!

- Outreach webpage with public content and links to scientific results and news (in coordination with GREAT, ESA, ...). Translation to our languages.
- Launch webcast and activities.
- News (the mission, science, ...)
- Contests & Web games (flash?)
- Mobile Apps:
  - Google sky type planetarium using Gaia data
  - Where is Gaia now?
  - Science alerts (interesting for amateur astronomers)
  - Games



# SOME IDEAS

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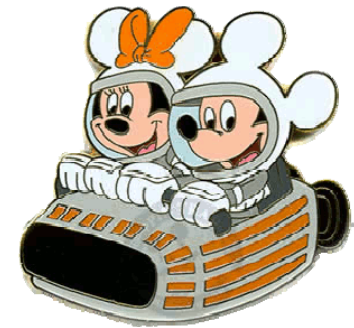
- Public Software:
  - Visualising and exploring the MW in 4D (space and time)
  - Illustrating concepts: Parallax, Stellar evolution, Variability, Multiple systems, Historical evolution of catalogues,
- Papercrafts and scale models: → 3D printer could make them less expensive?
  - Update Gaia model. Soyuz + Gaia?
  - Improve Gaia skyglobe
  - 3D constellations, ...
- Comic strips:
  - Gaia
  - The Milky way
  - History of astrometry





# ACTIVITIES

- Offer talks to primary/secondary schools (don't wait for them). Coordinated at national level, as in IYA2009?
- Prepare exhibitions:
  - Big unknowns of our Galaxy
  - Distances to stars
  - Gaia mission & satellite
  - Scientists & Industrial counterparts
- Write a book (e-book)?
  - History of astrometry
  - The Milky Way
  - The Gaia mission, the archive, ...
- Gaia media:
  - Documentary, TV shows, Radio interviews, vodcast, podcast

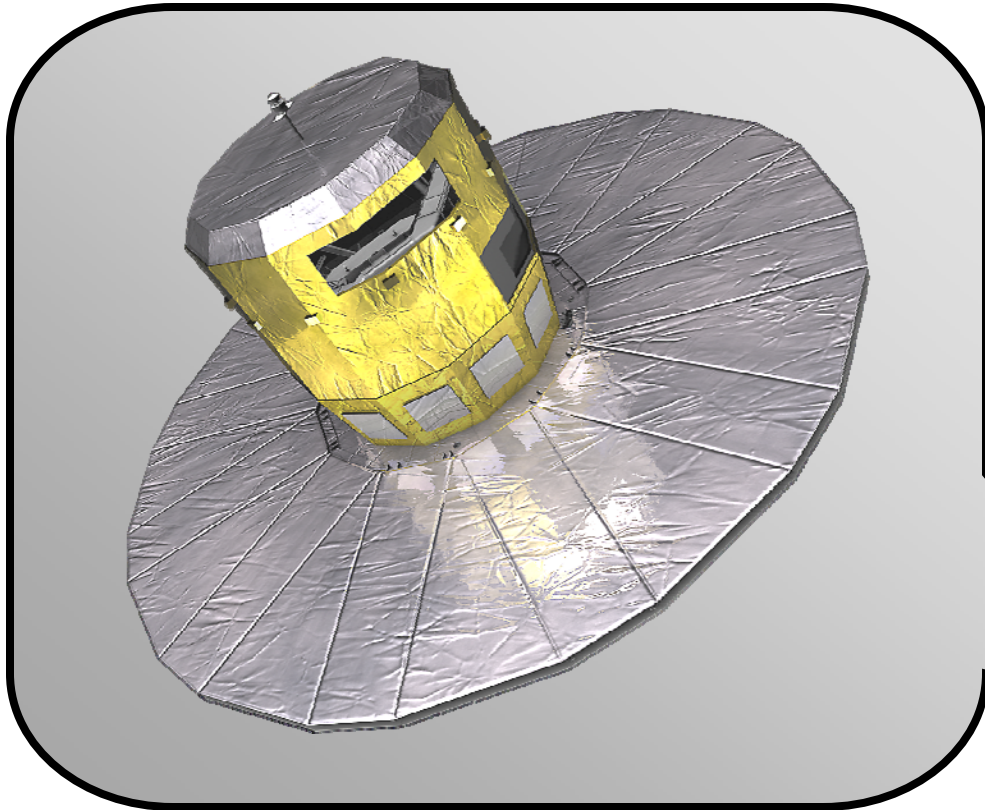




# USING GAIA ARCHIVE

Pre-packaged hands-on activities with Gaia archive (CLEA like):

- **Milky way in 3D**: Positions + motion + spectra. Time evolution.
- **Comparing Gaia** with other catalogues: Historical evolution of the Galaxy map (number of sources and precision). Multiwavelength MW. Sky as seen from a big city, eye limit and Gaia. Interstellar extinction map.
- **Deriving distances**: Parallaxes, cepheids, QSO redshift
- Absolute magnitudes and **HR diagram**
- Spectra changing with **astrophysical parameters** ( $T_{\text{eff}}$ ,  $\log g$ ,  $[M/H]$ ,  $z$ , ...)
- **Orbital parameters** for multiple systems and solar system objects.
- **Variable objects** lightcurves
- Derive **mass of Gaia** from its orbital parameters derived from observations from Earth.



**MAKE NOISE!**

**THANK YOU**



**Josep Manel Carrasco**

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<https://gaia.am.ub.es/Twiki/bin/view/RecGaia/DivulgaEsc>