



(By permission of John Hart. Field Enterprises.)



Anche i trogloditi sapevano che ...  
 "ci sono i RC"

Circa 100000 ( $10^5$ ) particelle/1 h generate da RC  
 Attraversano il nostro corpo

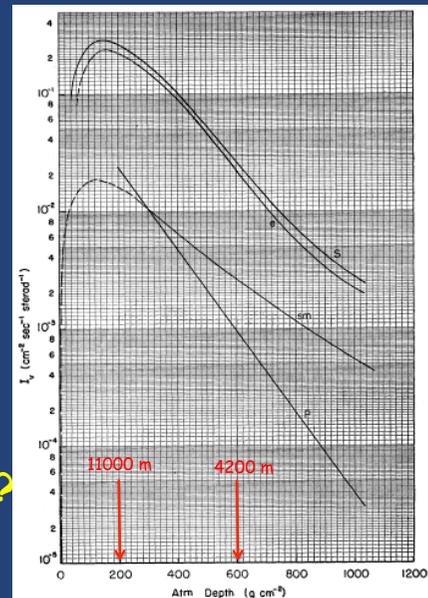
~ 16% della radiazione ambientale  
 (0.4 mSv/y)

2.4 mSv/y quella naturale

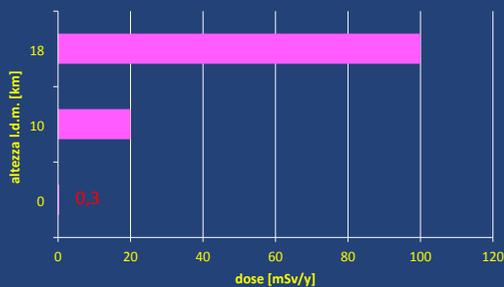
## Impatto biologico ?

- Beh noi (*Homo sapiens sapiens*) siamo qui da tanti anni .....

è per l'atmosfera ...!?!?



E i piloti e le hostesses ?



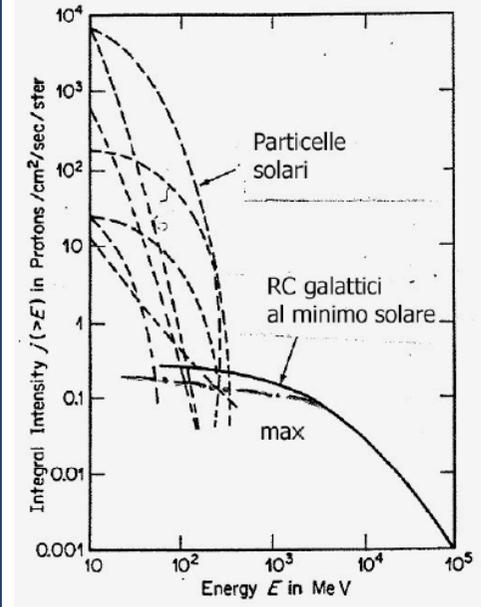
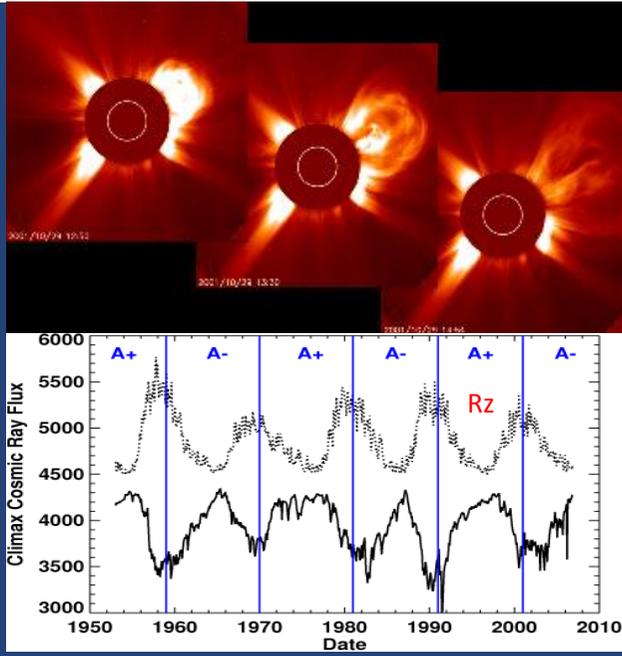
# 4

## I FANTASTICI

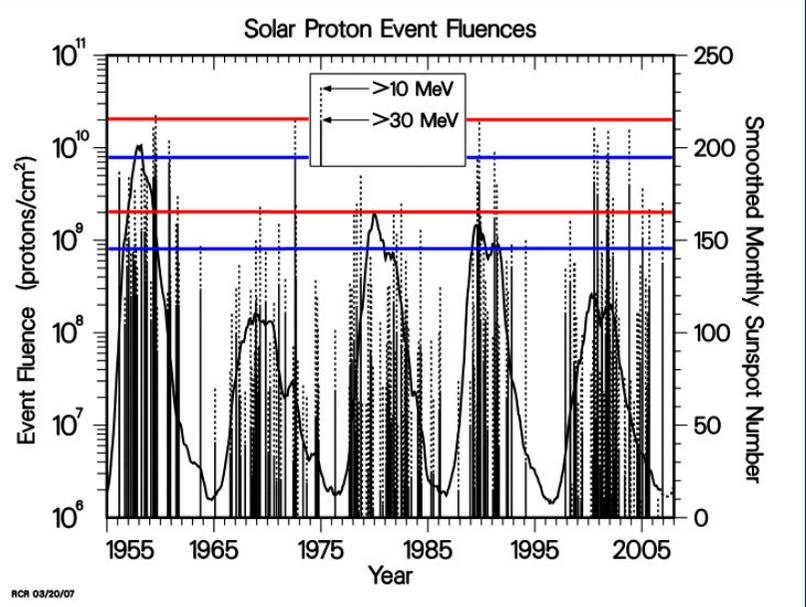
### ?

E allora .....

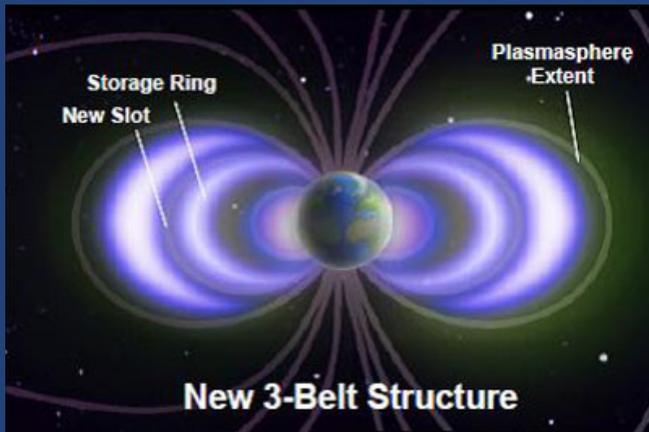
# Attività solare



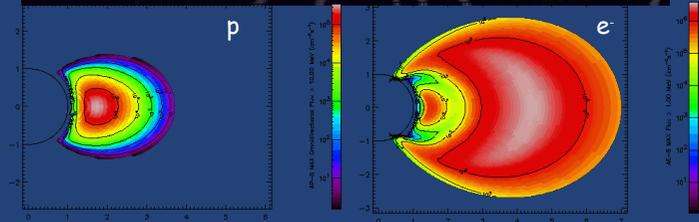
# Il cattivo



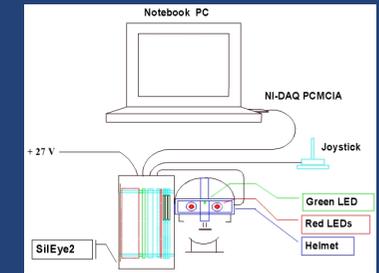
L'ESCLUSIVO DI VOI SU ALICE



New 3-Belt Structure



## I RC si "sentono" - SiEye



C'è altro che ci protegge !

Solar Dynamic Observatory NASA

- <http://spaceref.com/earth/a-blast-from-the-sun-and-it-affects-on-earth.html>

## Project MARS

A Technical Tale  
by Dr. Wernher von Braun

1950

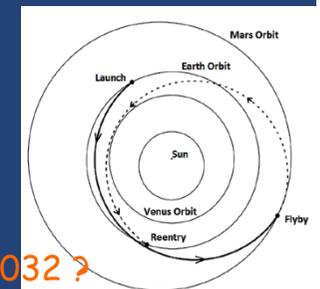


## Uomo su Marte - 1 il viaggio

2 possibilità ogni 15 anni  
Durata 1.4 anni (invece di 2-3.5anni)

Lancio Gen. 5, 2018 ( nel 2031)  
Marte Ago. 20, 2018 = 227 giorni  
Terra Mag. 20, 2019 = 274 giorni

2018-2032 ?

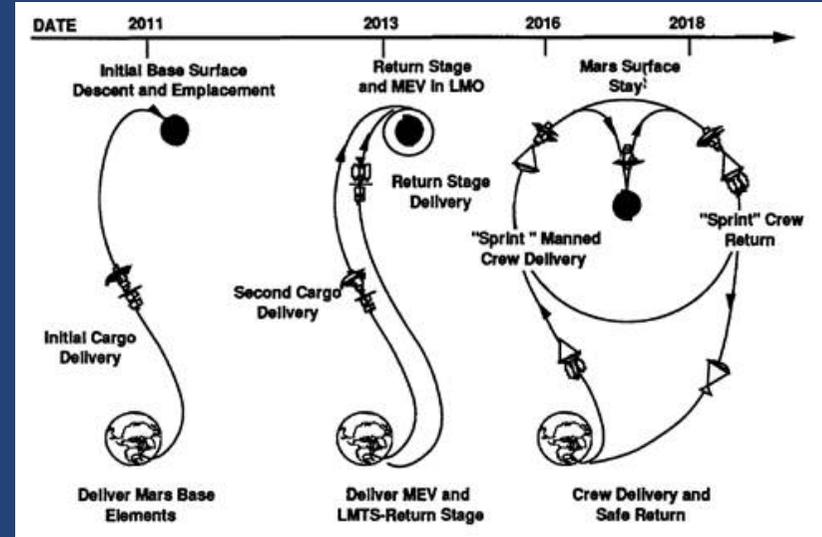


# NASA

## Mars Missions in This Decade

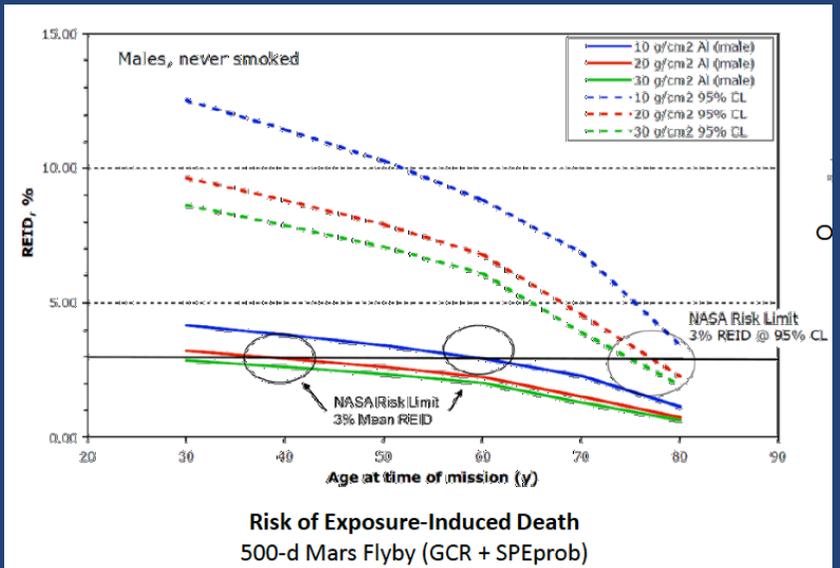


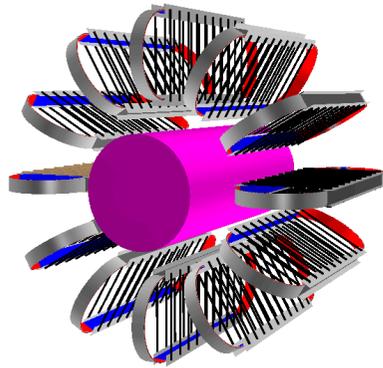
## Schema di "doppio sprint"



## Uomo su Marte - 2 misure di *Curiosity*

### Comparative Radiation Exposures

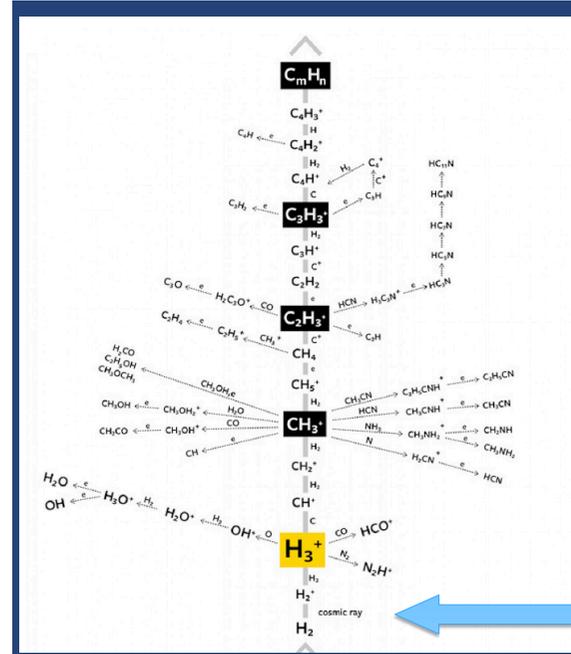
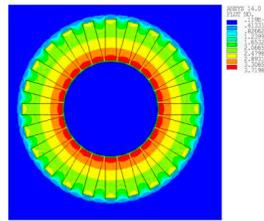
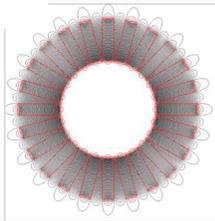




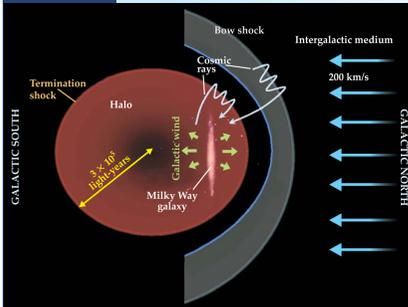
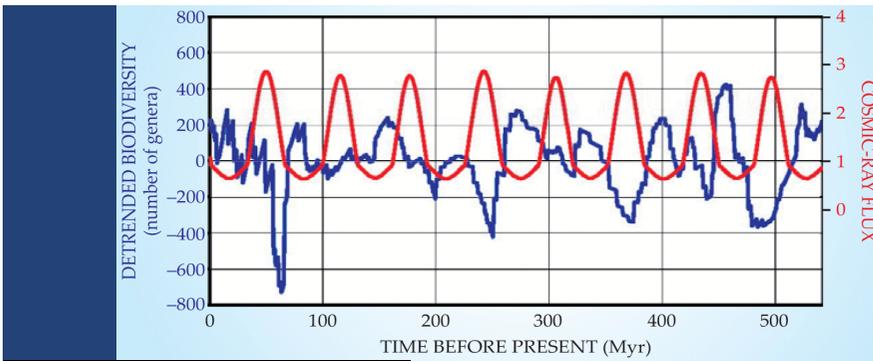
# Astronave con schermo magnetico

Field Lines

Magnetic Field B (T)

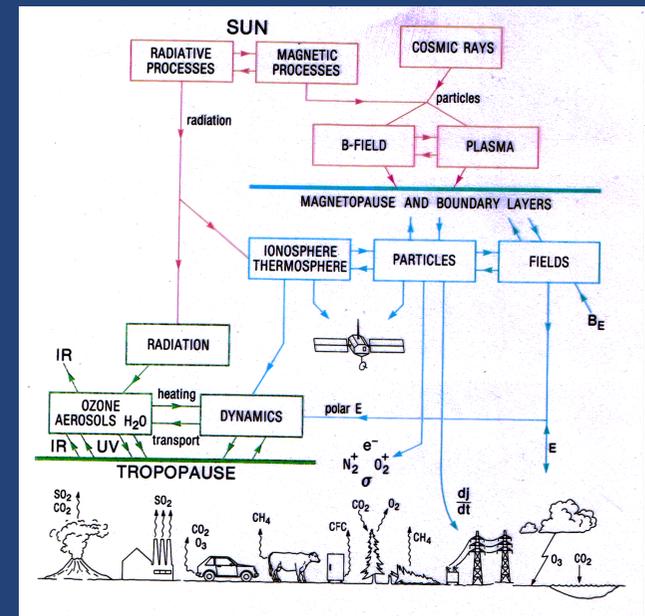


# Origine della vita nello spazio

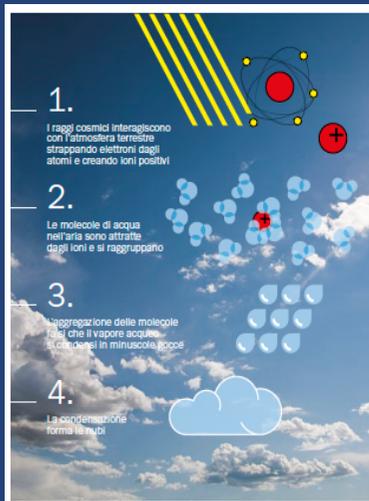


# Ciclo di 62 Myr nella biodiversità

# L'ambiente terrestre e i RC



# RC e nuvole (= clima)



## CLOUD @ CERN

Scoperte recenti:

- 1- ruolo vapori di ammine combinate a acido solforico nel formare aerosol tipo atmosfera
- 2- radiazione ionizzante tipo RC ha scarsa influenza nel formare questi aerosol