OMICS International

Prof. MSc.:

Luiz Sampaio Athayde Junior

Professor at School of Accounting Sciences of Federal University of Bahia (FCC/UFBA) and also Professor of Astronomy Course of Physics Institute (IF/UFBA) and the University Jorge Amado (Unijorge), ex Professor at Visconde de Cairú University (FVC) of over graduation and has experience as a Tax Analyst. A Master in Business Administration and Extension in Higher Education Methodology by the School of Administration of Federal University of Bahia (EA/UFBA), Post Graduate MBA in Financial Management and Company, Post Graduate and Research Center at Visconde de Cairú (CEPPEV/FVC). Accountant and Degree Bachelor of Accounting Sciences by Estacio University Center of Bahia (Estacio/FIB) and is certified by IAFC First Degree in International Standards of Accounting-IFRS.

sampaioathayde@yahoo.com.br

Prof. MSc.: Luiz Sampaio Athayde Junior

- His publications of Accounting area have appeared in many websites specializing in tax and international accounting standards-IFRS. He is author of the Blog www.contabeisufba.blogspot.com.br His research in the accounting area also made him the creator of New Accounting Policy, recently published in the Brazilian Journal of Accounting (RBC), the most important publication in Brazil in this area.
- In the area of Astronomy he has made presentations in numerous symposia and conferences in Brazil on the main university and Venezuela and had his research also published in Spain. He is author of the Blog www.veraodabahia.blogspot.com.br read in over 70 countries and in more than 20 languages. He is also author of the book "The Solar Zenith Theory" (in portuguese "A Teoria do Zênite Solar") published by Editors of Federal University of Bahia (EDUFBA). His research in the Astronomy area helps to create a Tropical Astronomy and new seasons for tropical zone.

sampaioathayde@yahoo.com.br

- # Paradoxical Variation of the Solar Day Related to Kepler / Newton System

(Found from *The Solar Zenith Theory*)

Prof. MSc.: Luiz Sampaio Athayde Junior

A Teoria do Zênite Solar

Book

Author: Luiz Sampaio Athayde Junior

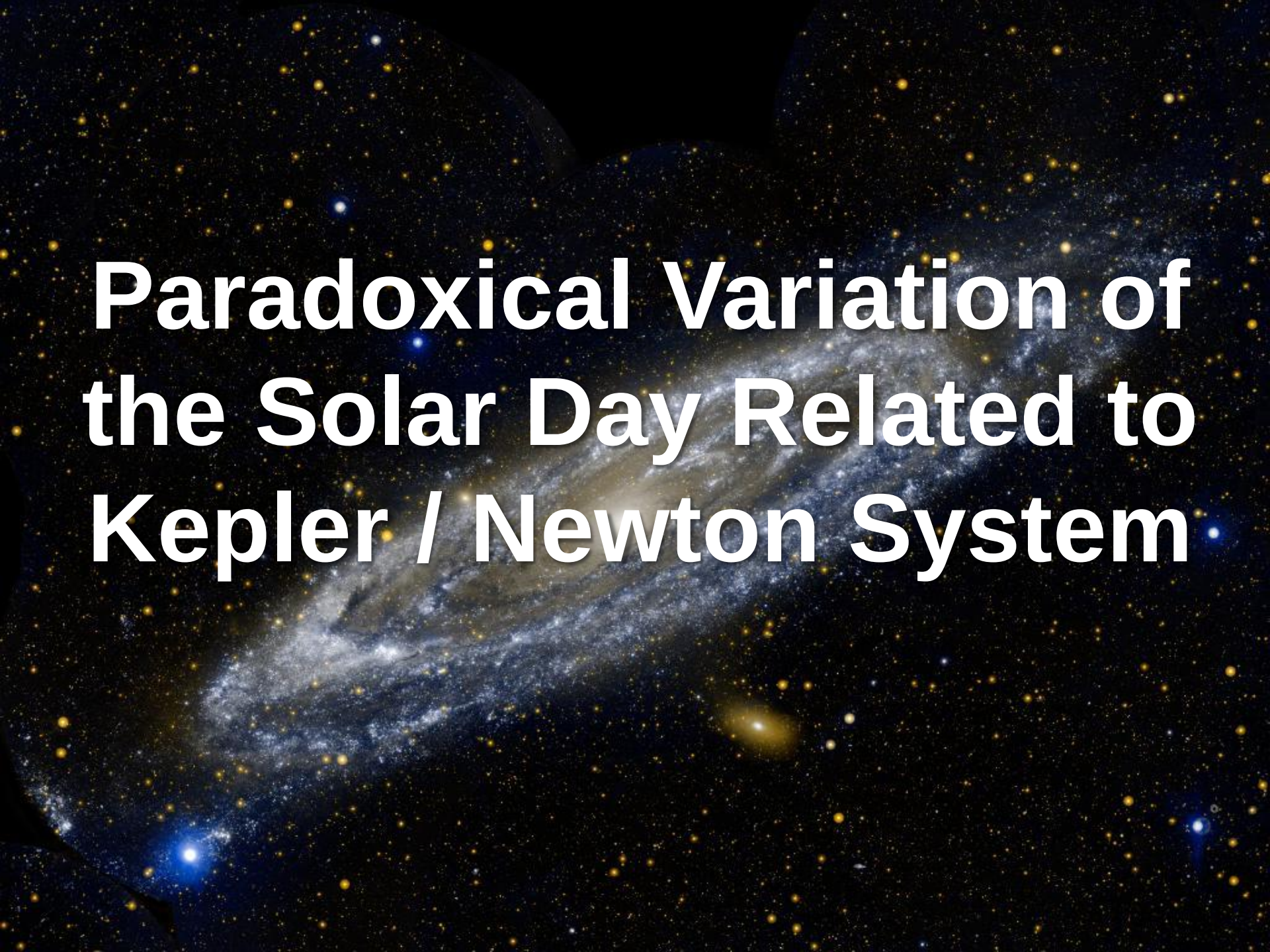
Preface: Prof. Alberto Brum Novaes

Editors from Ufba: EDUFBA

E-mail: sampaioathayde@yahoo.com.br


A TEORIA
do
ZÊNITE SOLAR
Uma proposta para as estações do ano
nas localidades intertropicais
LUIZ SAMPAIO ATHAYDE JÚNIOR
EDUFBA


Paradoxical Variation of
the Solar Day Related to
Kepler / Newton System


Paradoxical Variation of the Solar Day Related to Kepler / Newton System

PVSDRKNS

- Solar Day Concept:
- According to Kepler de Oliveira (UFRGS) is the interval of time between two successive passages of the Sun by the meridian of the place - two consecutive upper culminations of the Sun.

PVSDRKNS

- Solar Day Concept :
- It's 3^m56^s longer than the sidereal day because the sun is moving in the opposite direction to the diurnal motion, that is, from west to east. This difference is due to the Earth translation movement around the Sun, of approximately 1 degree (4 min / Day) - (360°/year=360°/(365,25 days)=0,9856°/day).

www.veraodabahia.blogspot.com.br /

Paradoxical Variation of the Solar Day Related Kepler/Newton Sys.

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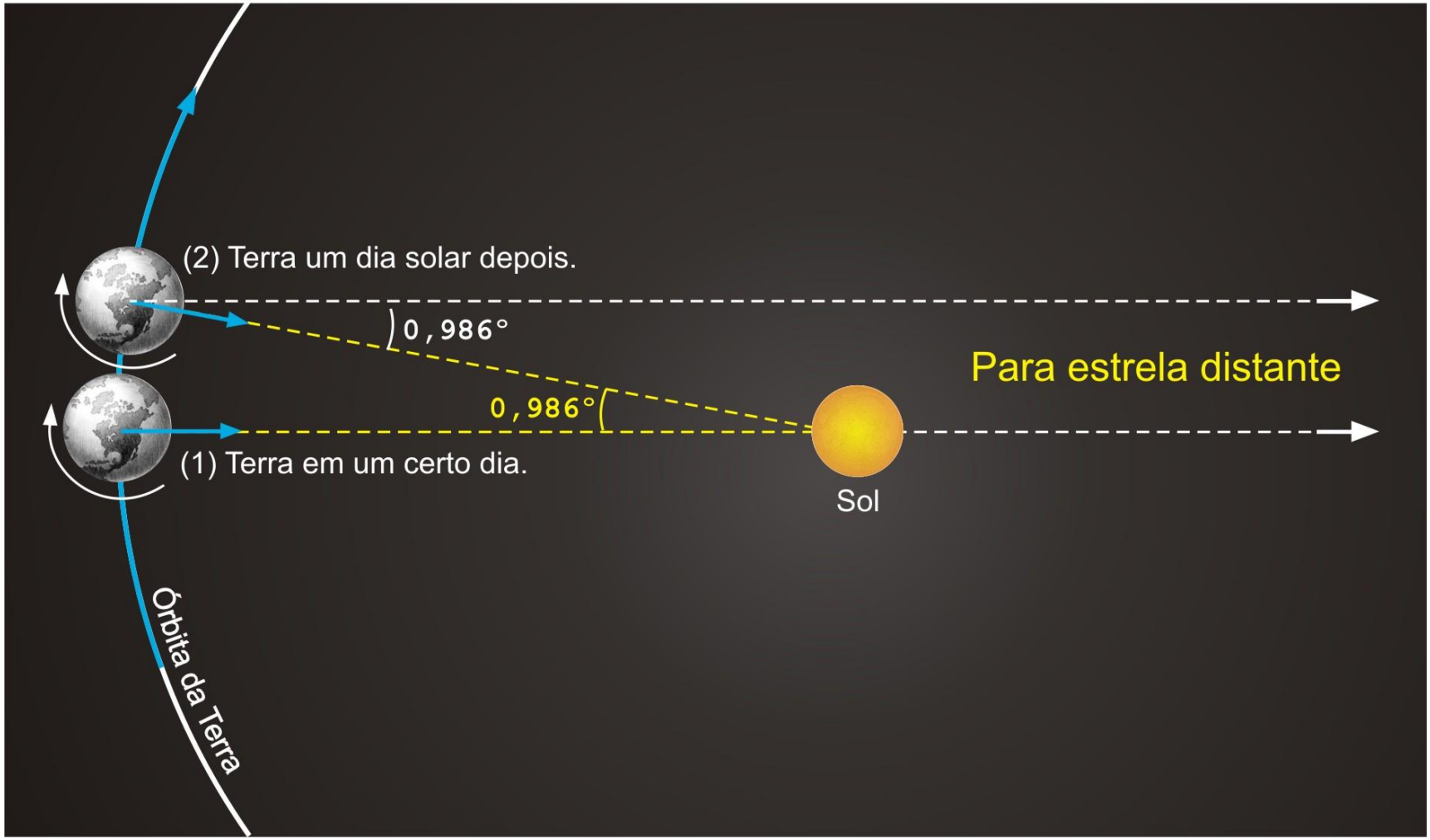


PVSDRKNS

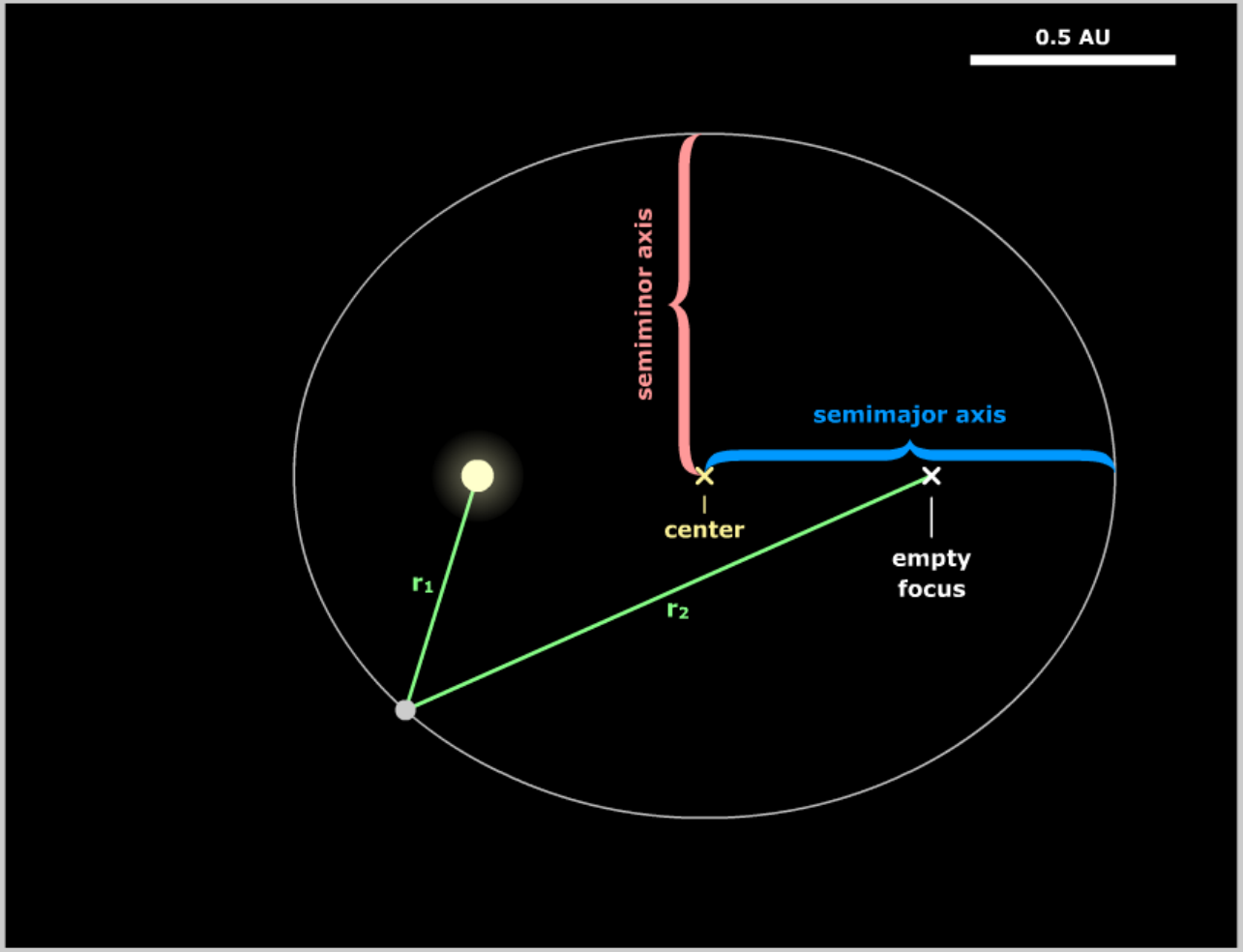
- Simulators by University From Nebraska:

- The First Kepler's Law
- The Second Kepler's Law

(Johannes Kepler, German Astronomer – 1571/1630)

Planetary Orbit Simulator

reset help about



Orbit Settings

set parameters for: Mercury OK

semimajor axis (AU) 1.00

eccentricity 0.553

Animation Controls

start animation

animation rate (yrs/s) 0.20

Kepler's 1st Law

Kepler's 2nd Law

Kepler's 3rd Law

Newtonian Features

- [x] show empty focus
- [x] show center
- [x] show radial lines
- [x] show semiminor axis
- [x] show semimajor axis

$r_1 + r_2 = 2 \times a$

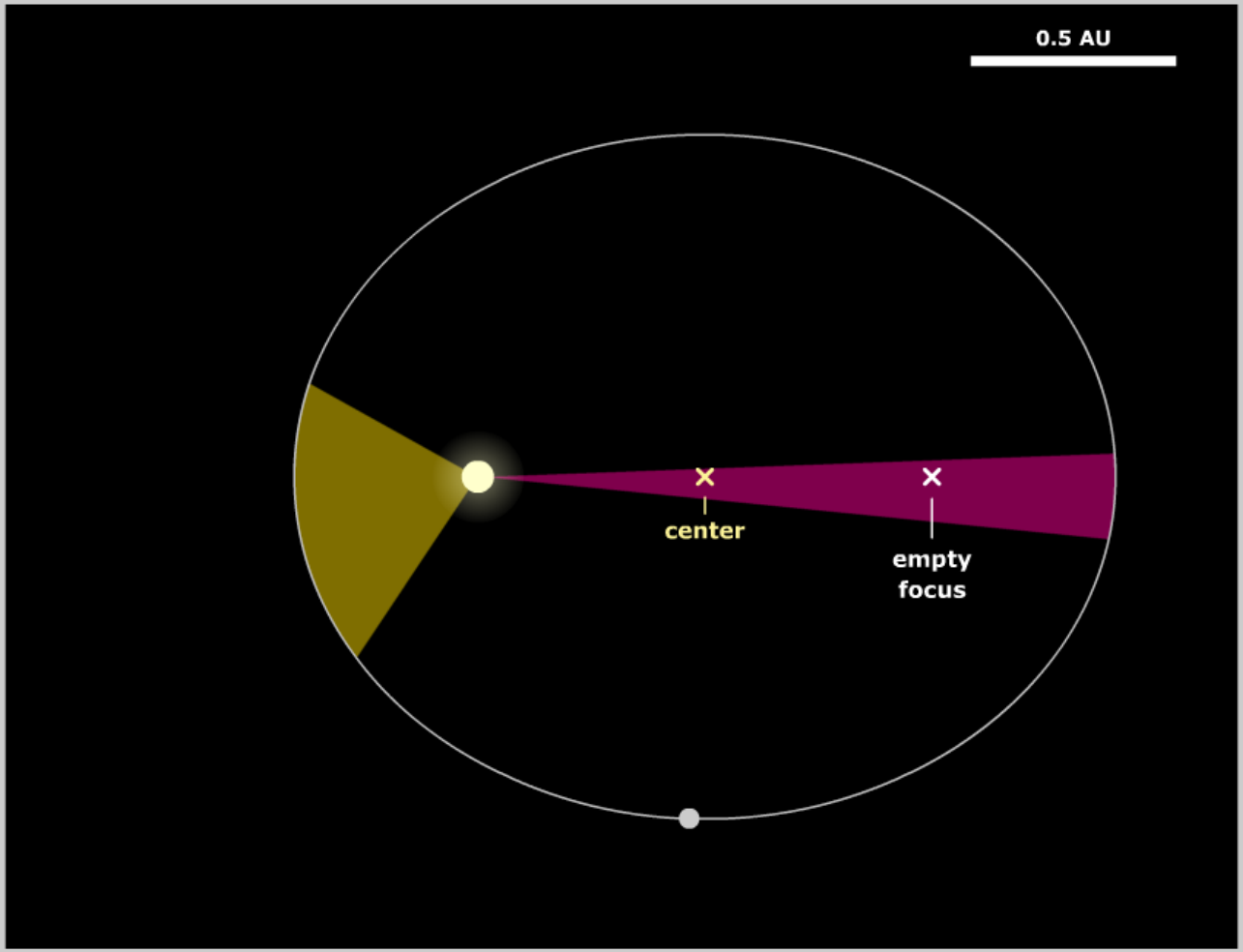
0.597 AU + 1.40 AU = 2.00 AU

Visualization Options

- [ ] show solar system orbits
- [ ] show solar system planets
- [ ] label the solar system orbits
- [ ] show grid

clear optional features

Planetary Orbit Simulator



Orbit Settings

set parameters for: Mercury OK

semimajor axis (AU) 1.00

eccentricity 0.553

Animation Controls

pause animation

animation rate (yrs/s) 0.063

Kepler's 1st Law

Kepler's 2nd Law

Kepler's 3rd Law

start sweeping

erase sweeps

sweep continuously

adjust size:

a fractional sweep size of $\frac{1}{16}$ (or 6.3%)

corresponds to sweep duration of

0.0625 years

Visualization Options

show solar system orbits

show solar system planets

label the solar system orbits

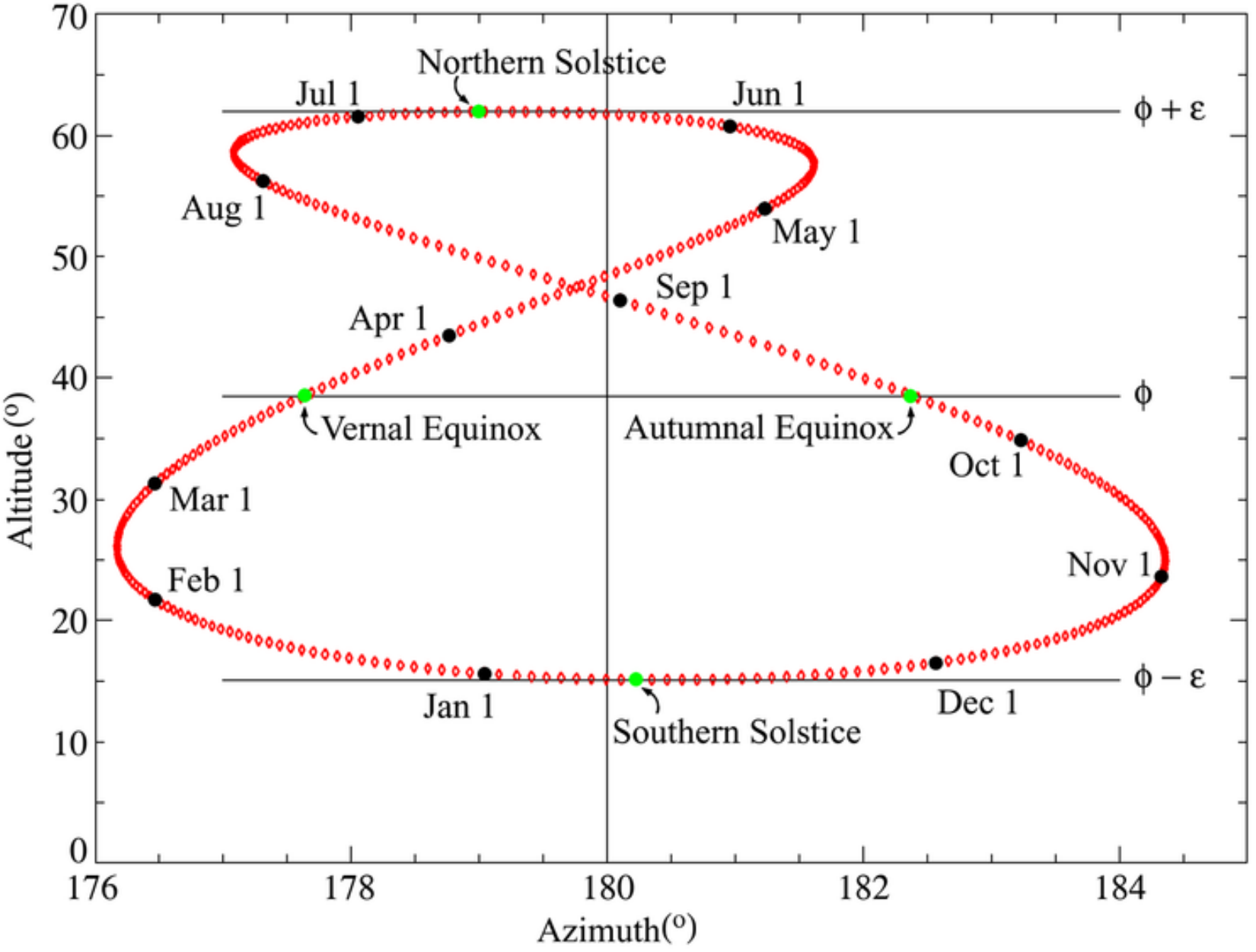
show grid

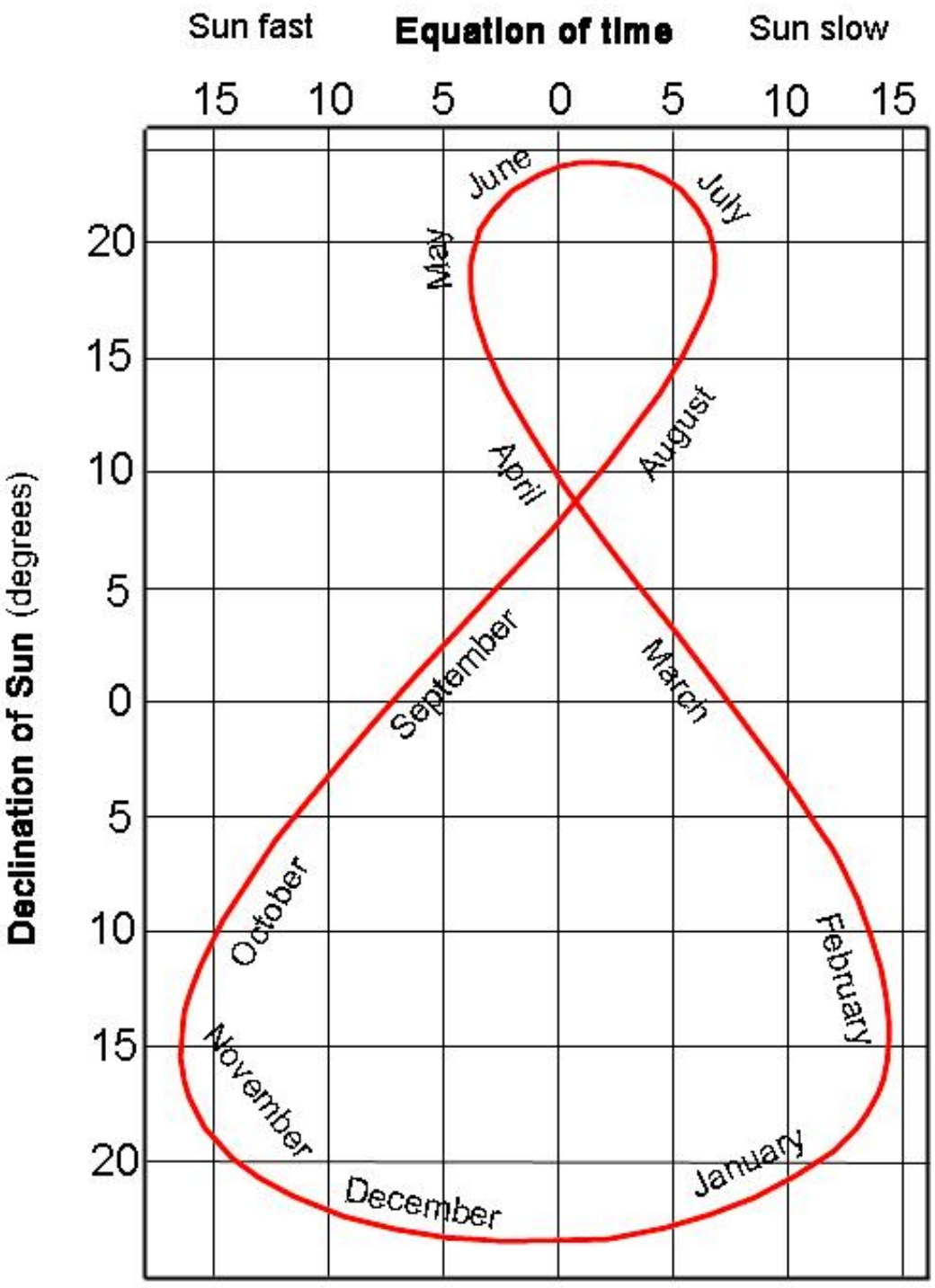
PVSDRKNS

- The Sun's Analemma:

- View from earth
- View from space (*The Solar Zenith Theory*)

(Inverted Calendar)


Northern Solstice
Jul 1
Jun 1
ϕ + ε
Aug 1
May 1
Sep 1
Apr 1
ϕ
Vernal Equinox
Autumnal Equinox
Oct 1
Mar 1
Nov 1
Feb 1
ϕ − ε
Jan 1
Dec 1
Southern Solstice
Altitude (°)
Azimuth(°)
70
60
50
40
30
20
10
0
176
178
180
182
184


Sun fast
Equation of time
Sun slow
15
10
5
0
5
10
15
Declination of Sun (degrees)
20
15
10
5
0
5
10
15
20
June
July
May
April
August
September
March
October
February
November
December
January


US Dept of State Geographer

MIGRAÇÃO DO
PONTO SUBSOLAR

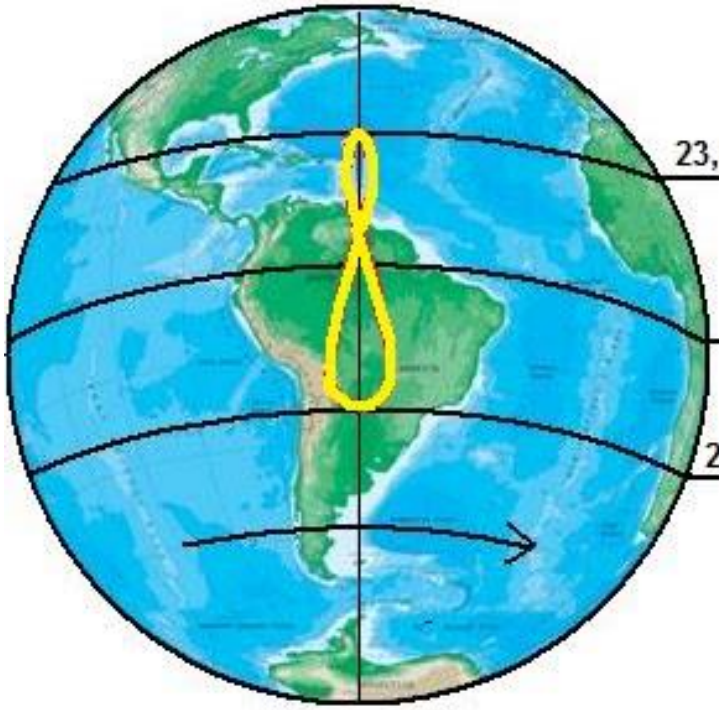
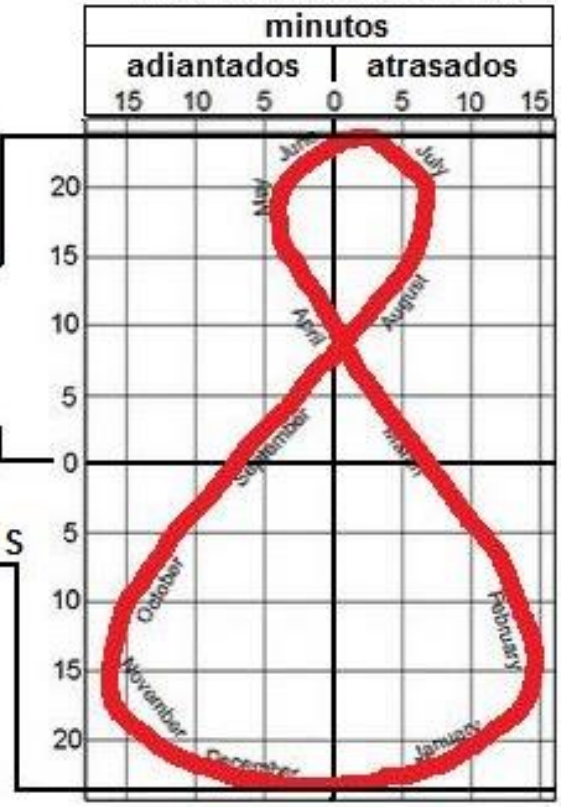


GRÁFICO ANALEMA



POSIÇÕES CELESTES
DO SOL
(MESMA HORA)

PVSDRKNS

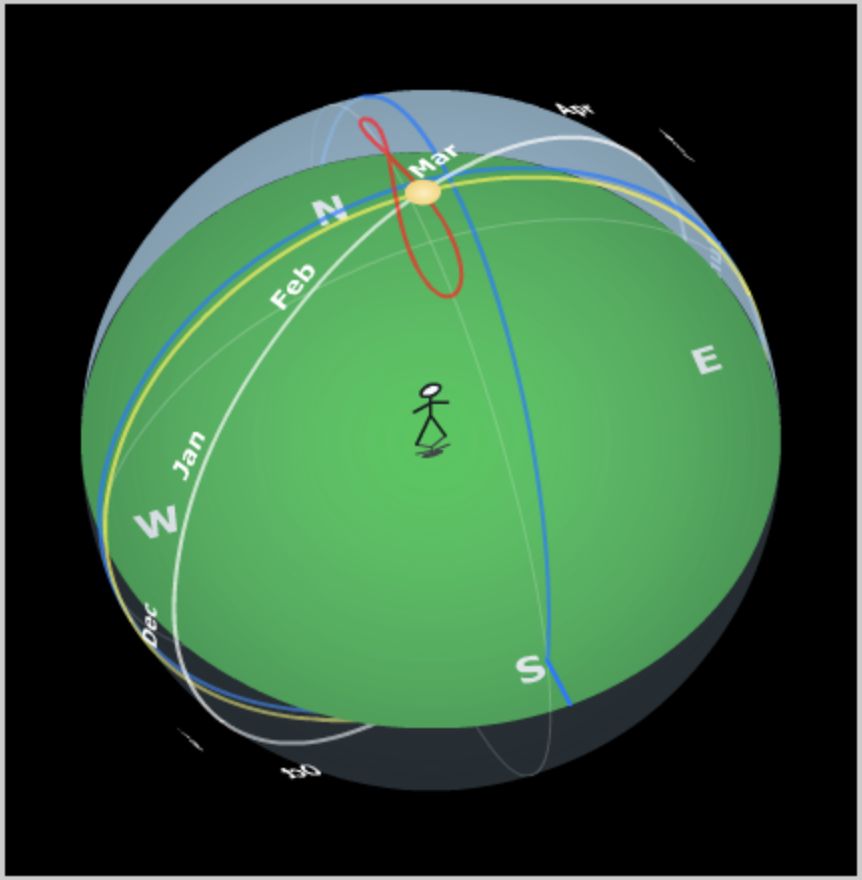
- Simulators by University From Nebraska:

- Motions of the Sun Simulator

(Original version in English and also available in Portuguese to download at: www.veraodabahia.blogspot.com.br)

Motions of the Sun Simulator

reset help about



Information

The horizon diagram is shown for an observer at latitude 12.9° S on 14 March at 12:00 (12:00 PM).

advanced

sun's hour angle: -0h 9m
sidereal time: 23h 29m
equation of time: -9:06
☑ show analemma

sun's altitude: 79.1°
sun's azimuth: 12.8°
sun's right ascension: 23h 38m
sun's declination: -2.3°

Time and Location Controls

the day of year: 14 March

| Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |

the time of day: 12:00

the observer's latitude: 12.9 ° S

Animation Controls

start animation

animation mode:

○ continuous ☐ loop day
◉ step by day

animation speed: 41 days/sec

slower faster

☐ use lower quality graphics when animating to improve performance

General Settings

☑ show the sun's declination circle
☑ show the ecliptic
☑ show month labels
☑ show underside of celestial sphere
☑ show stickfigure and its shadow

dragging the sun's disk changes the ...

◉ time of day
○ day of year

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- A translation with both Simulators by University From Nebraska

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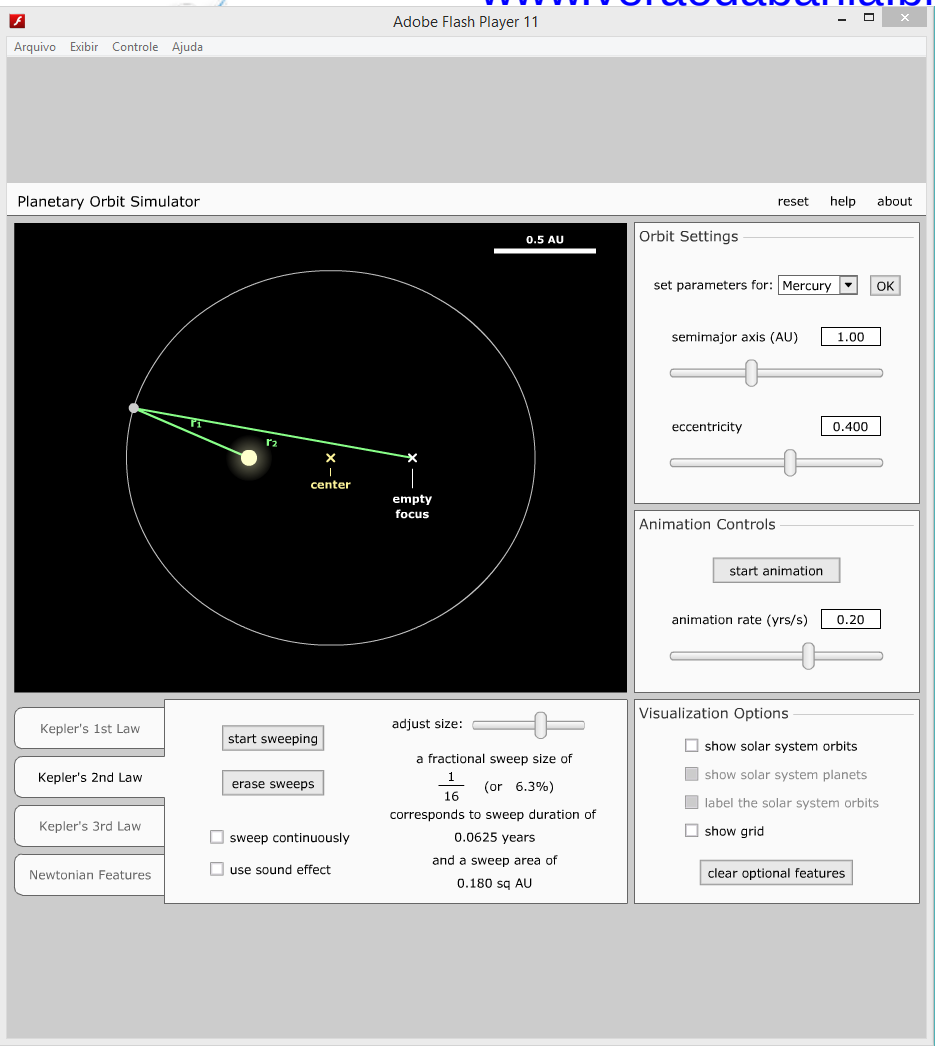
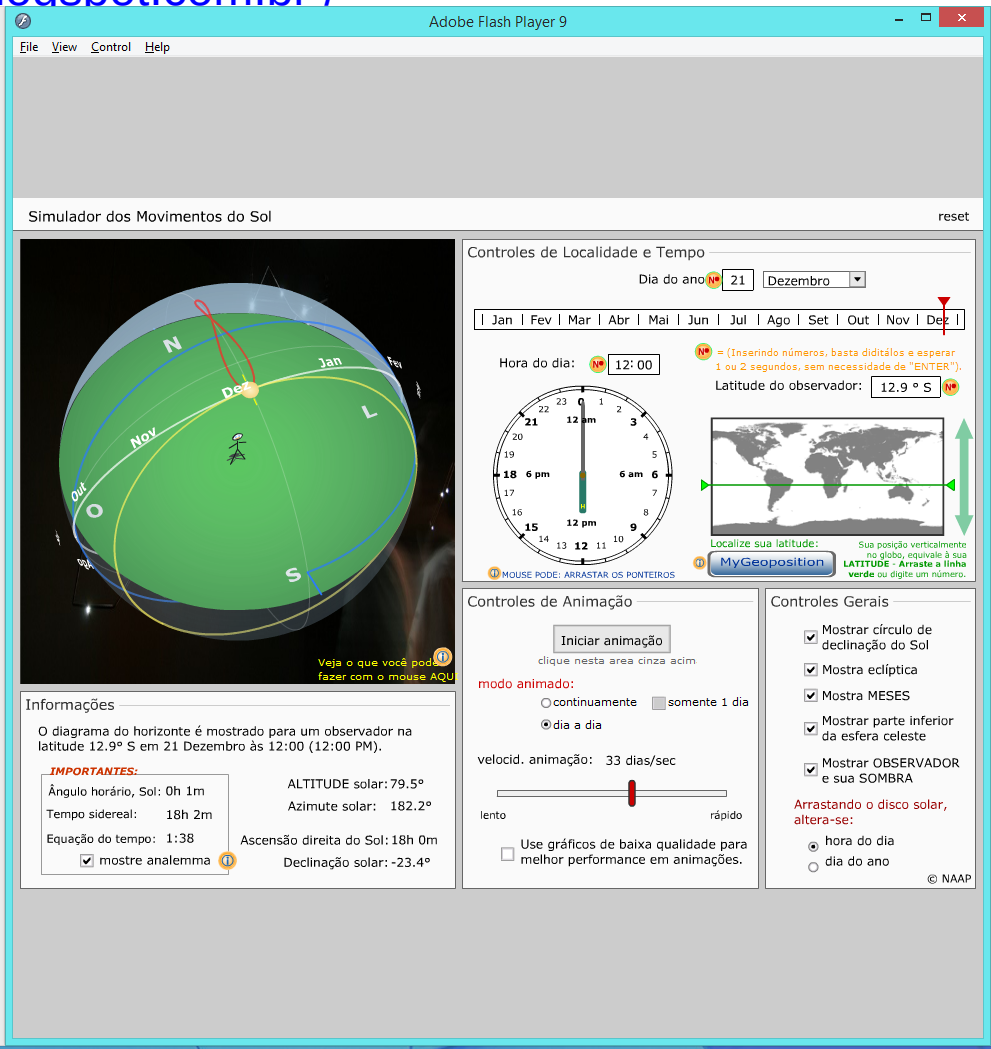
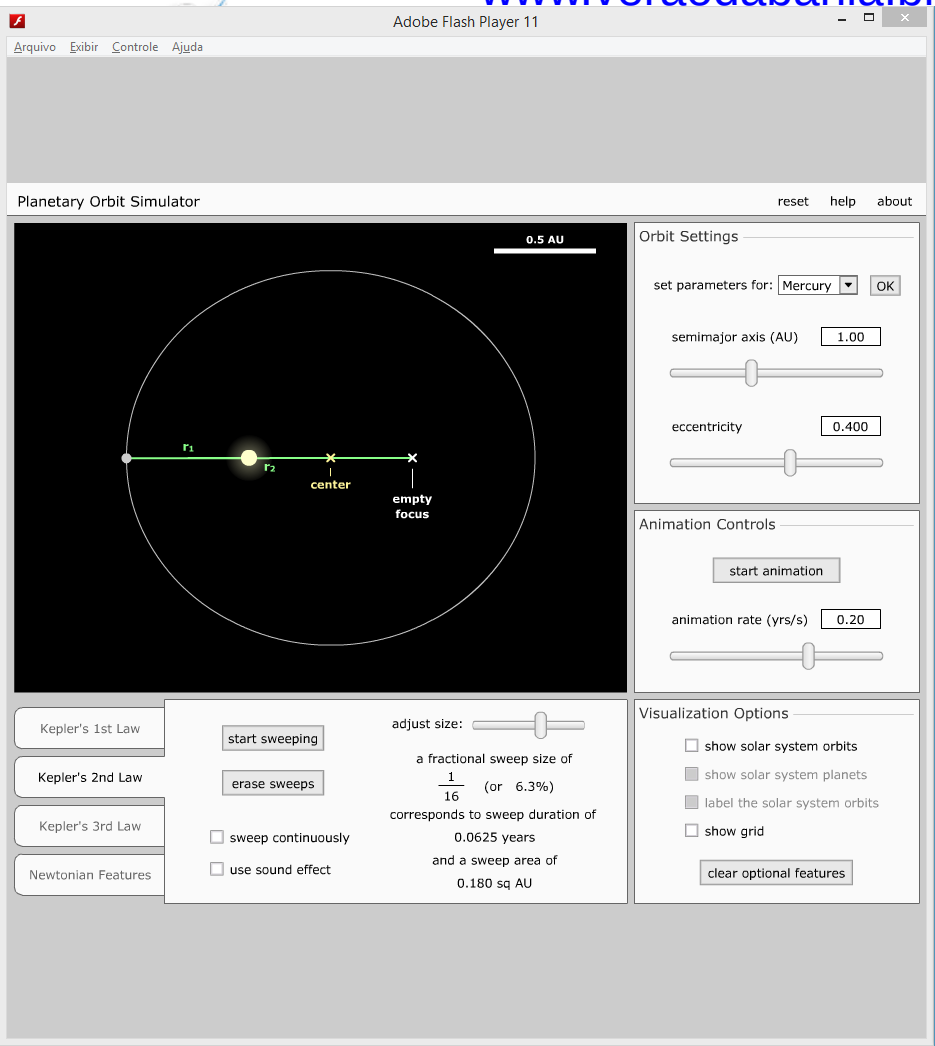
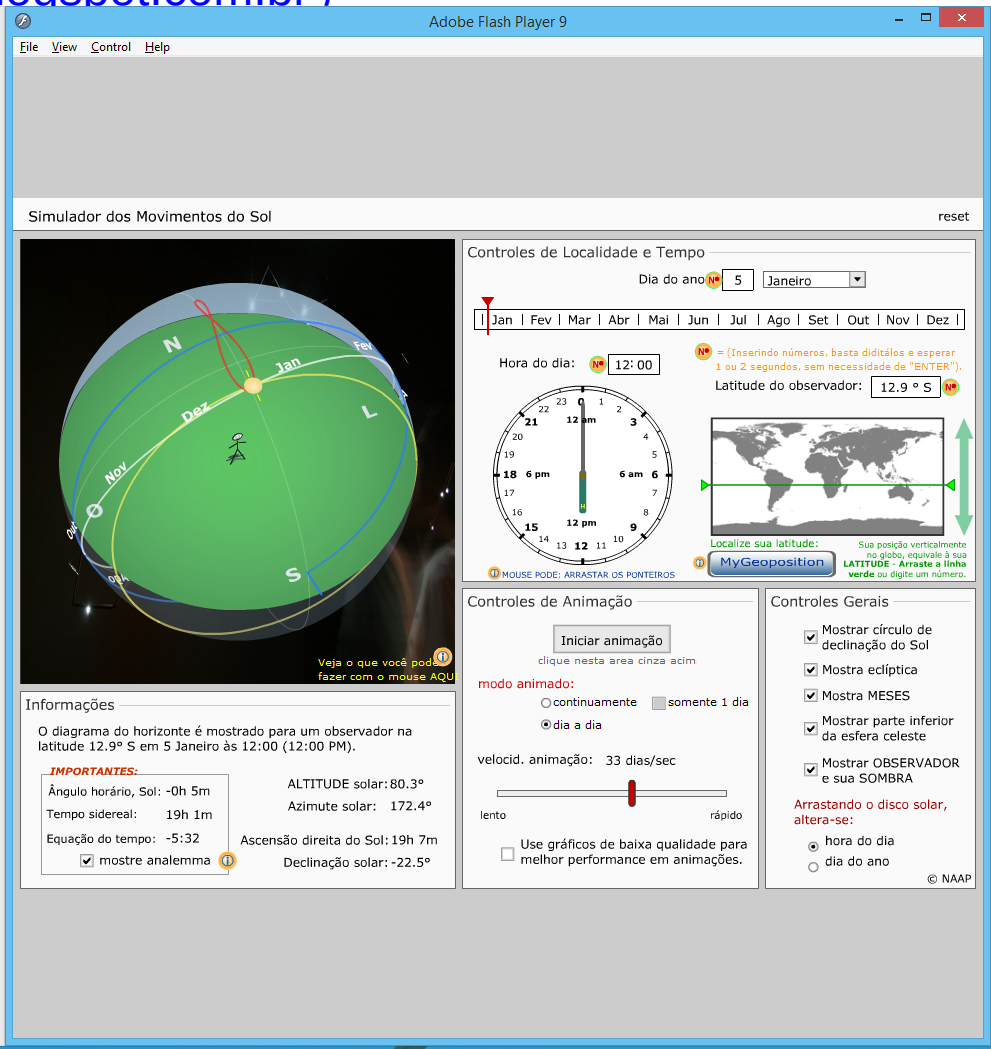




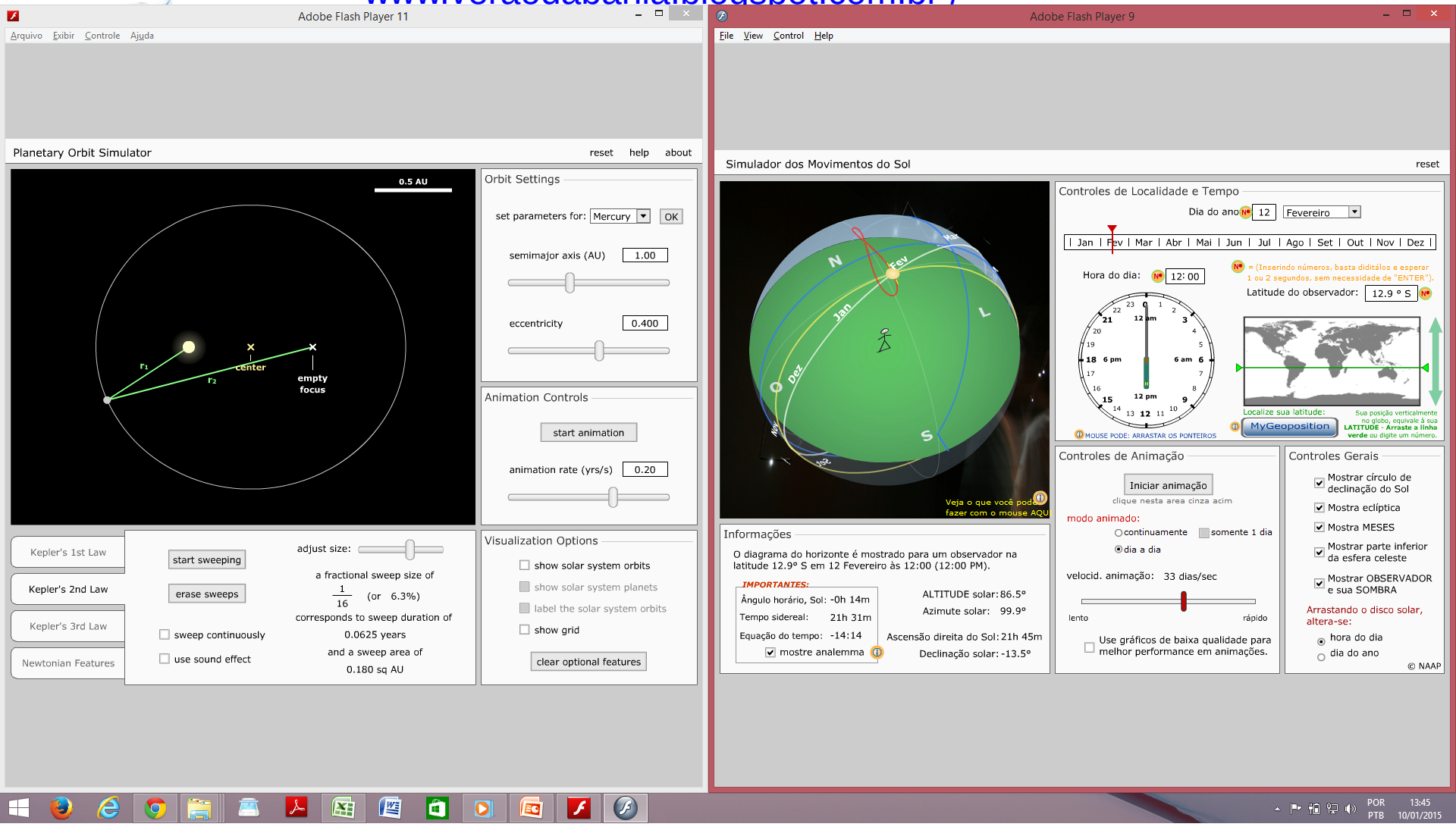
Date: December 21st

www.veraodabahia.blogspot.com.br /

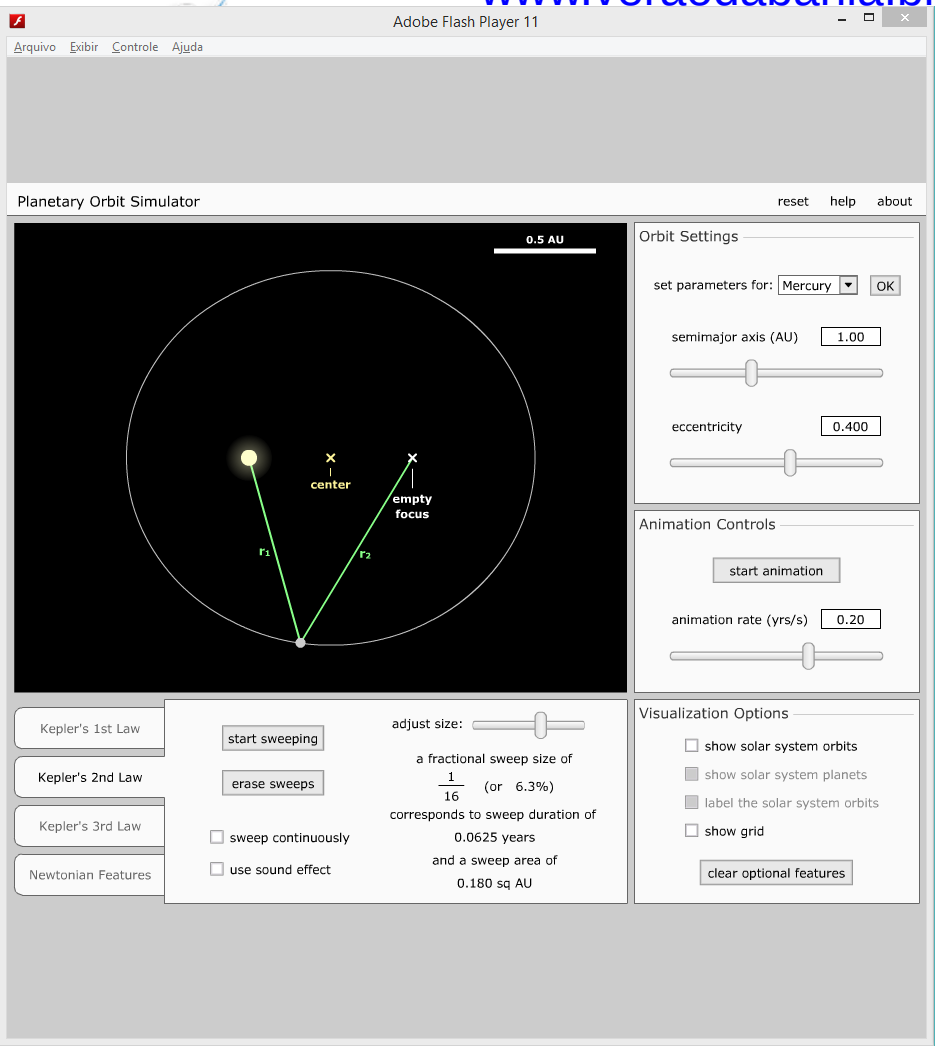


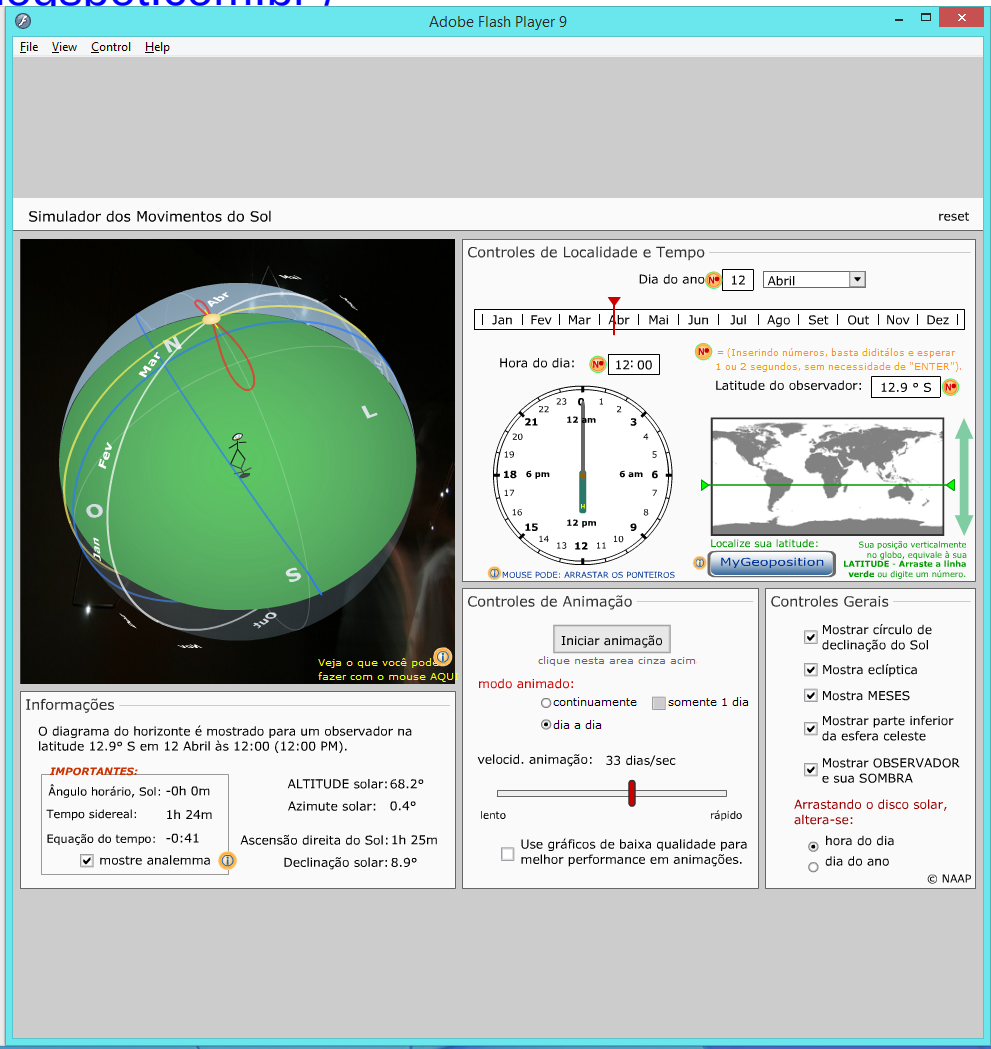


Date: January 5th

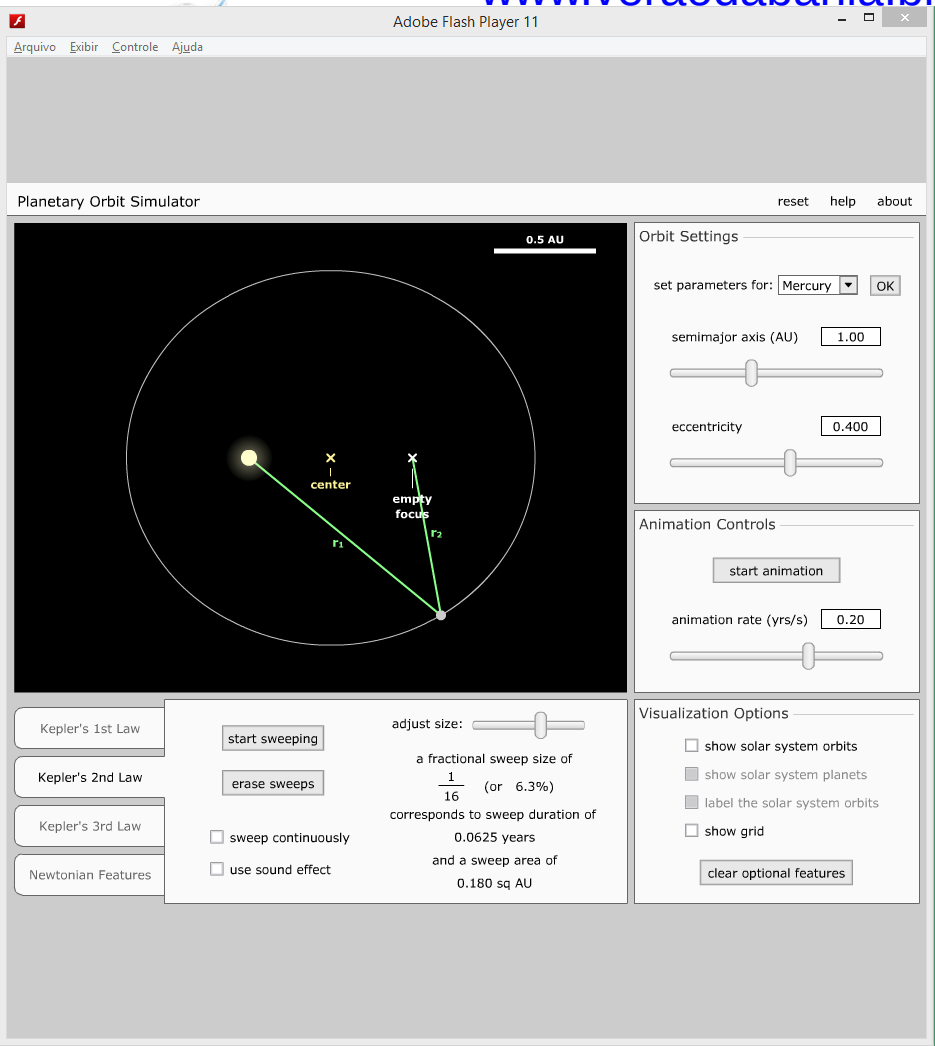


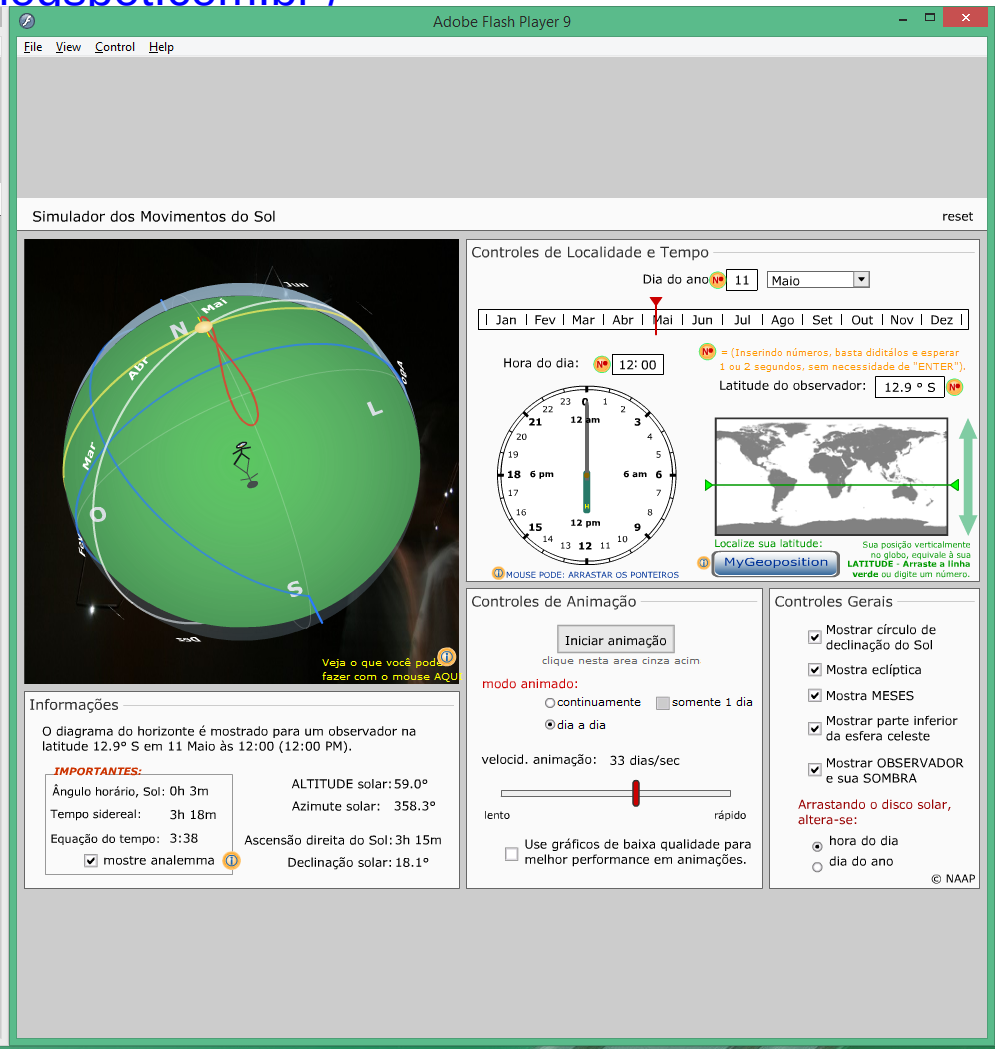
Date: February 12th





Date: April 12th





Date: May 11th

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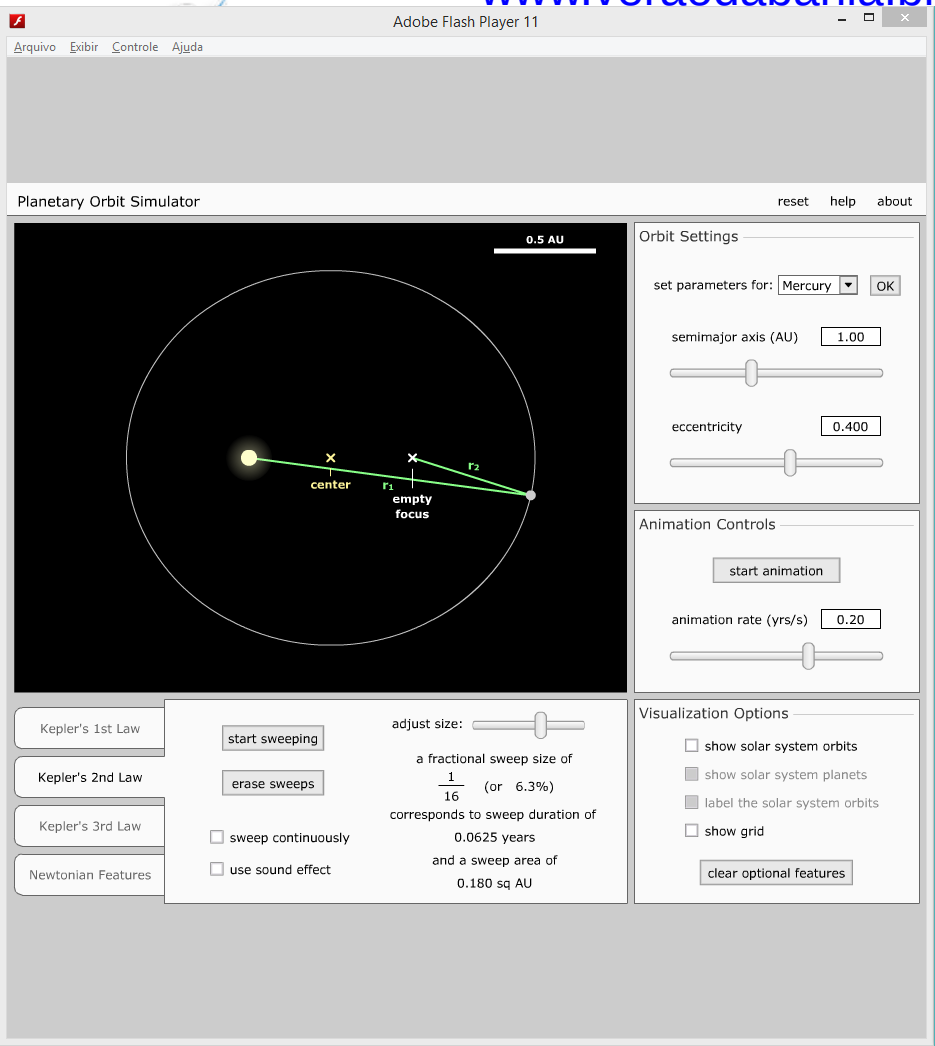

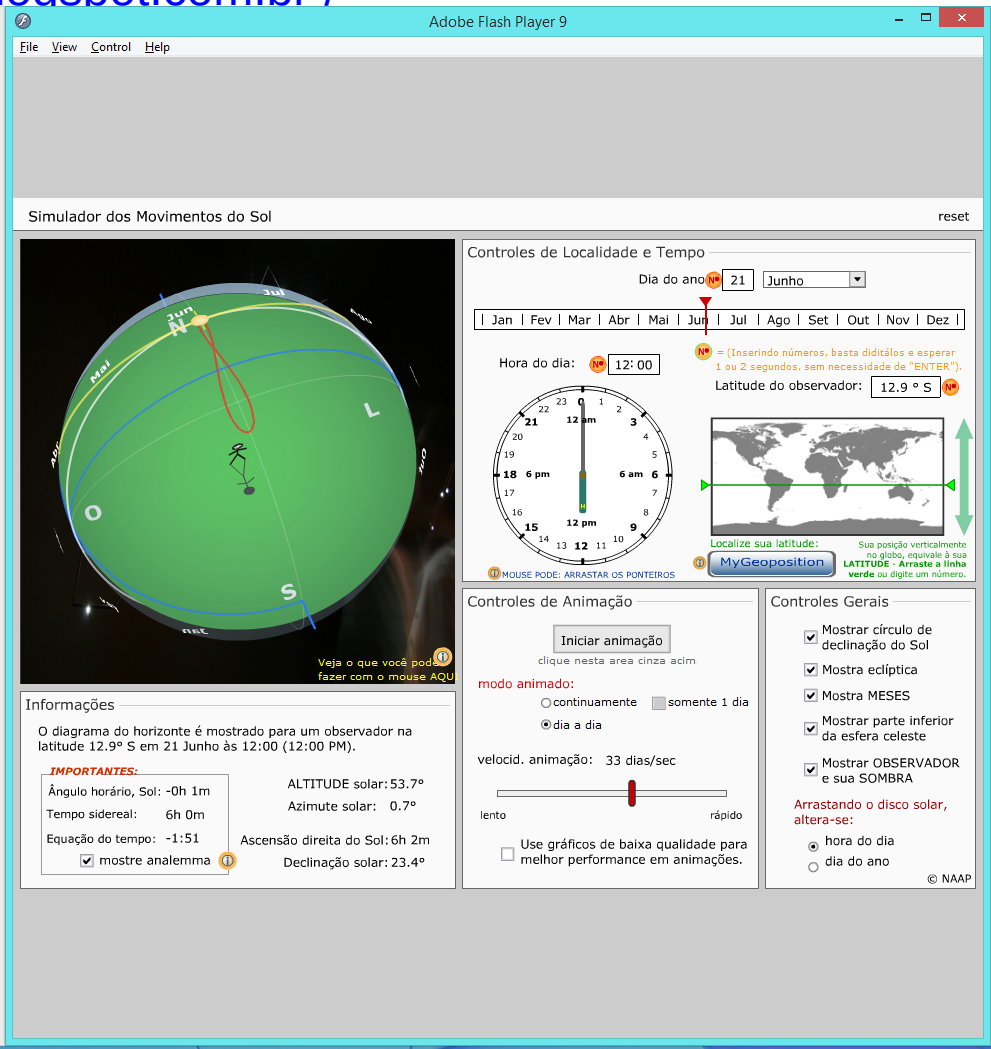

Date: June 21st

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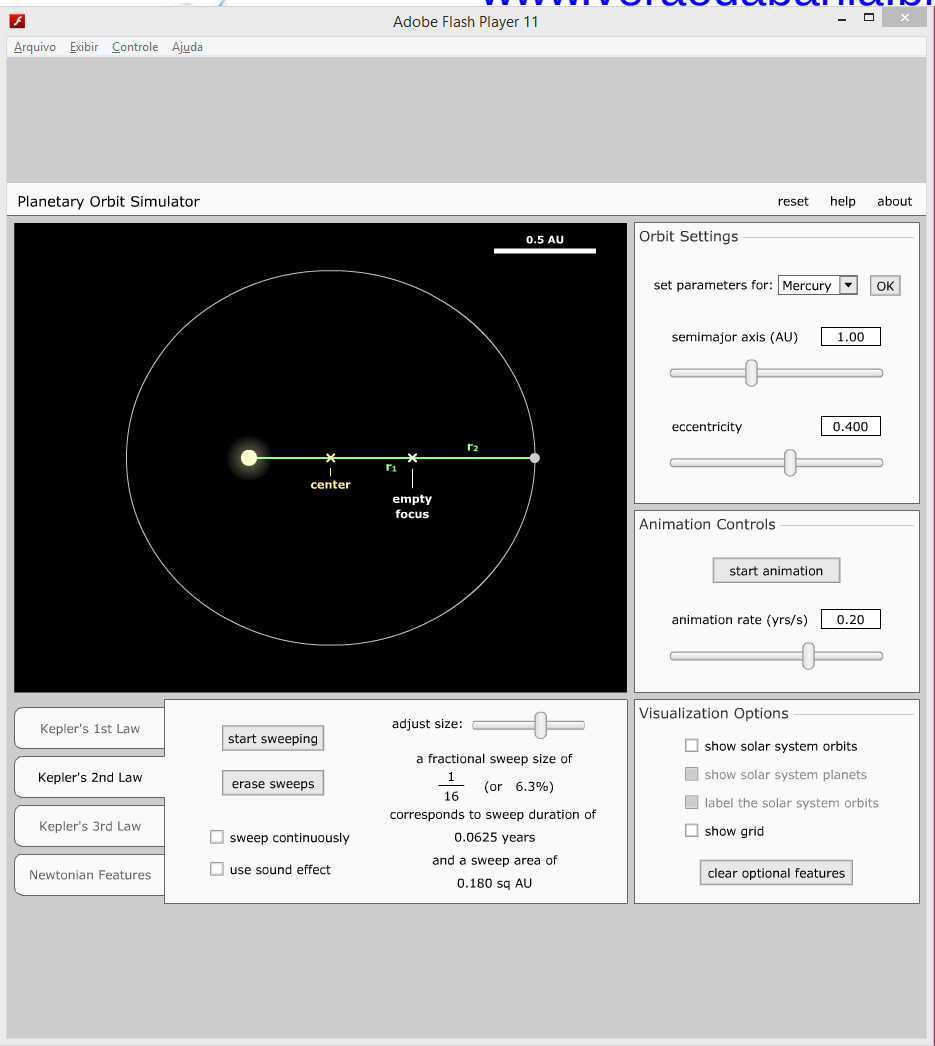

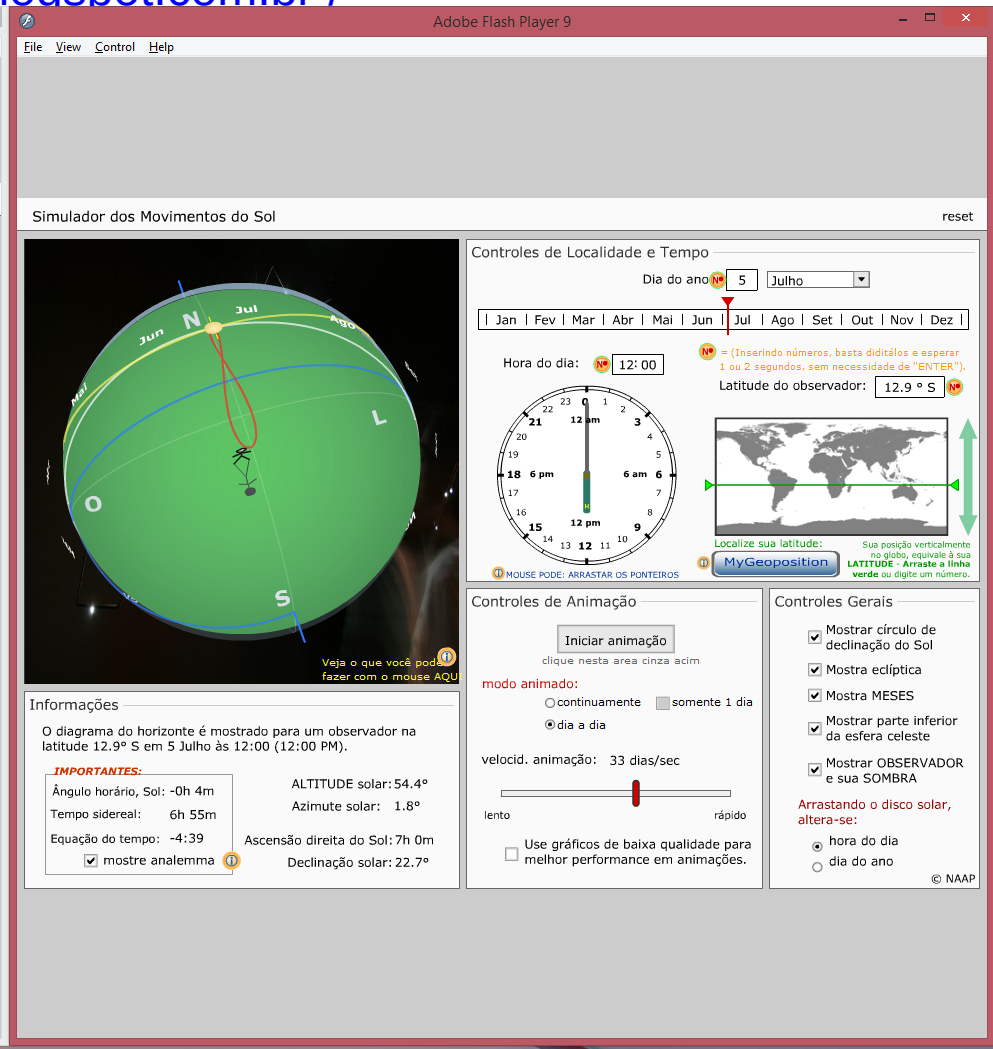

Date: July 5th

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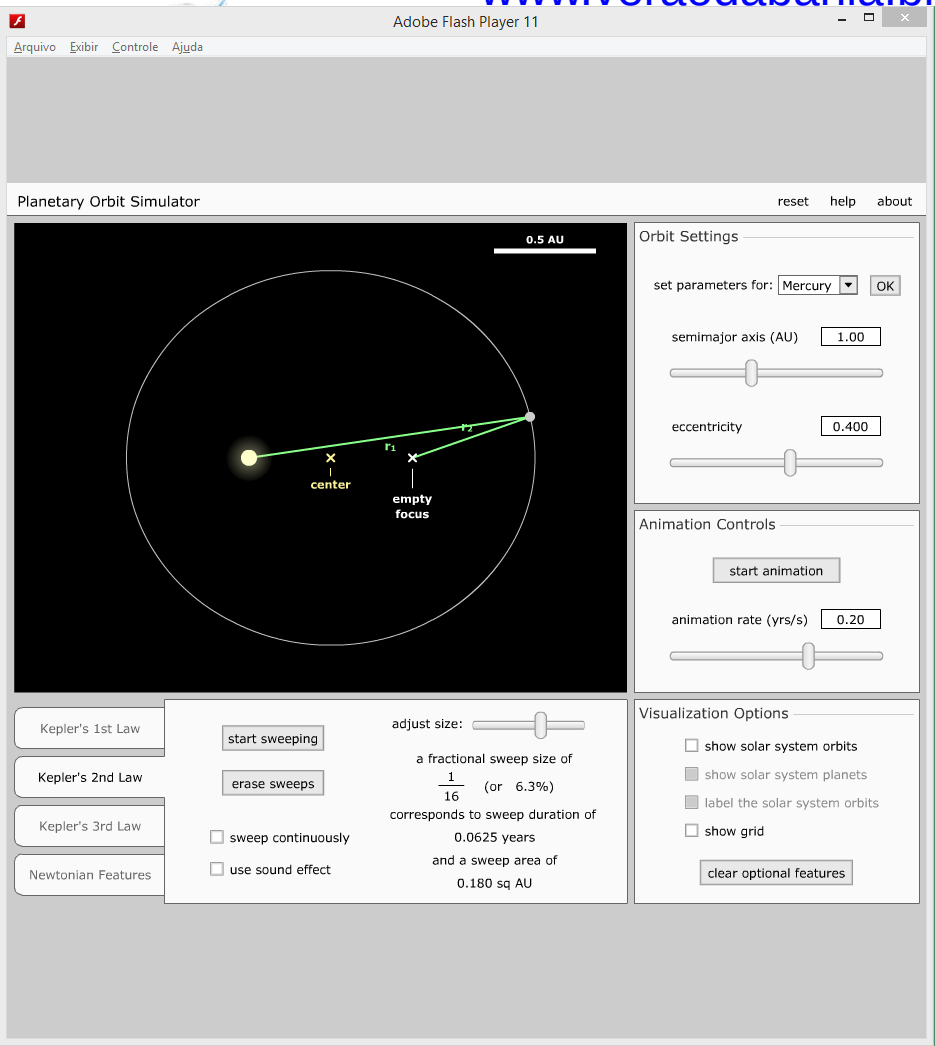

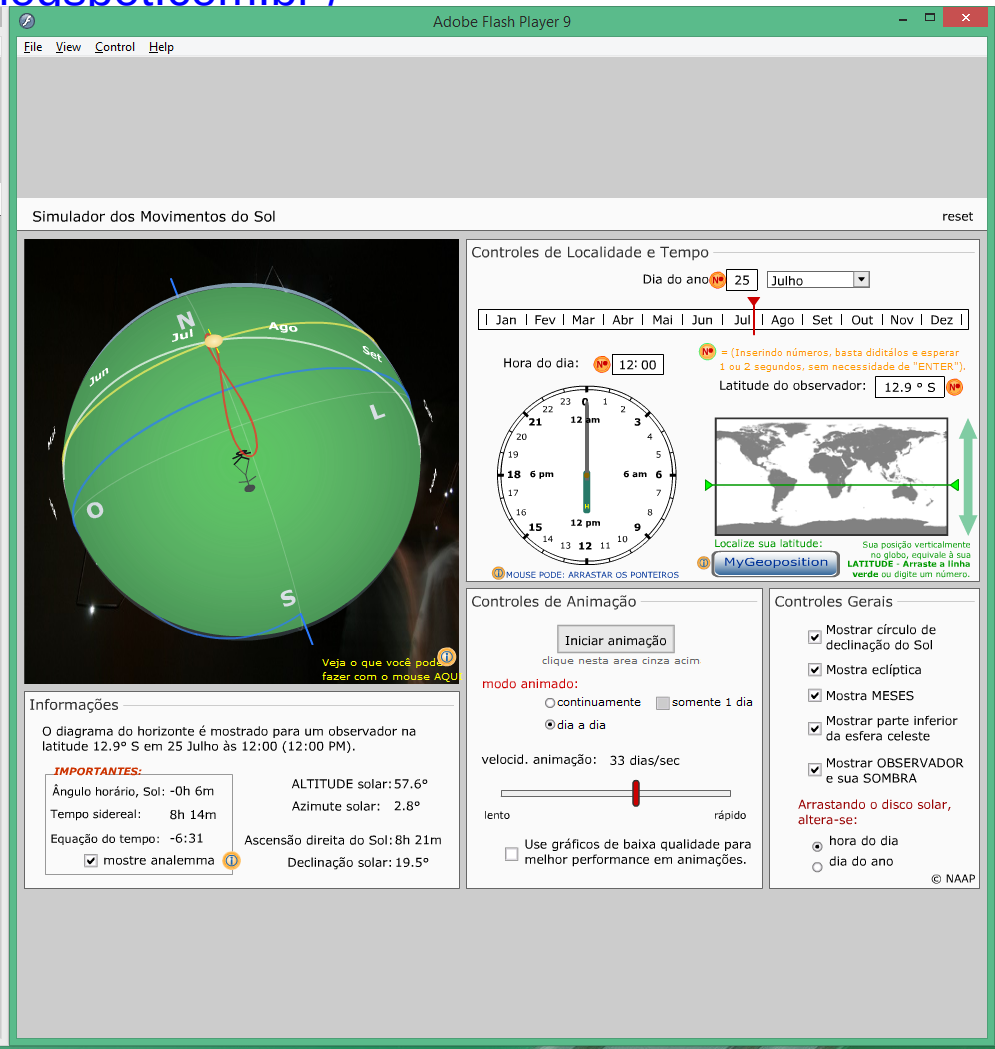

Date: July 25th

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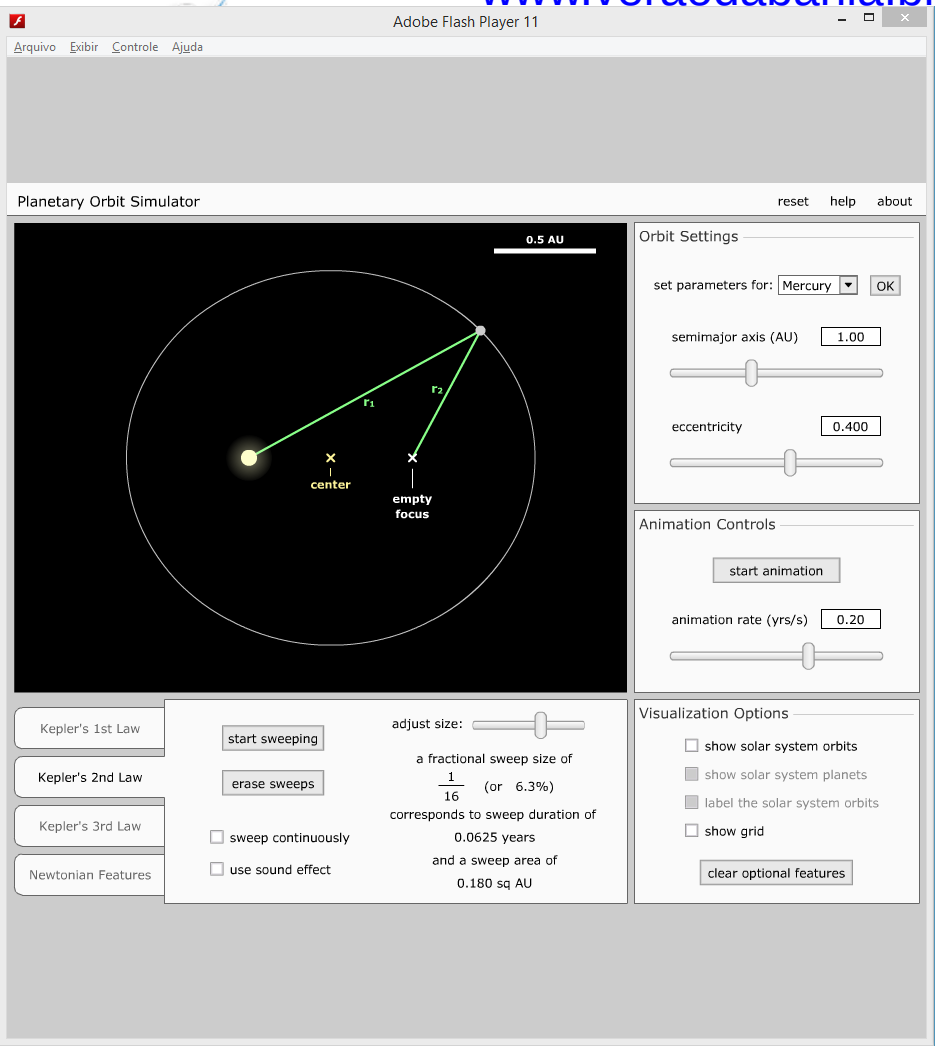
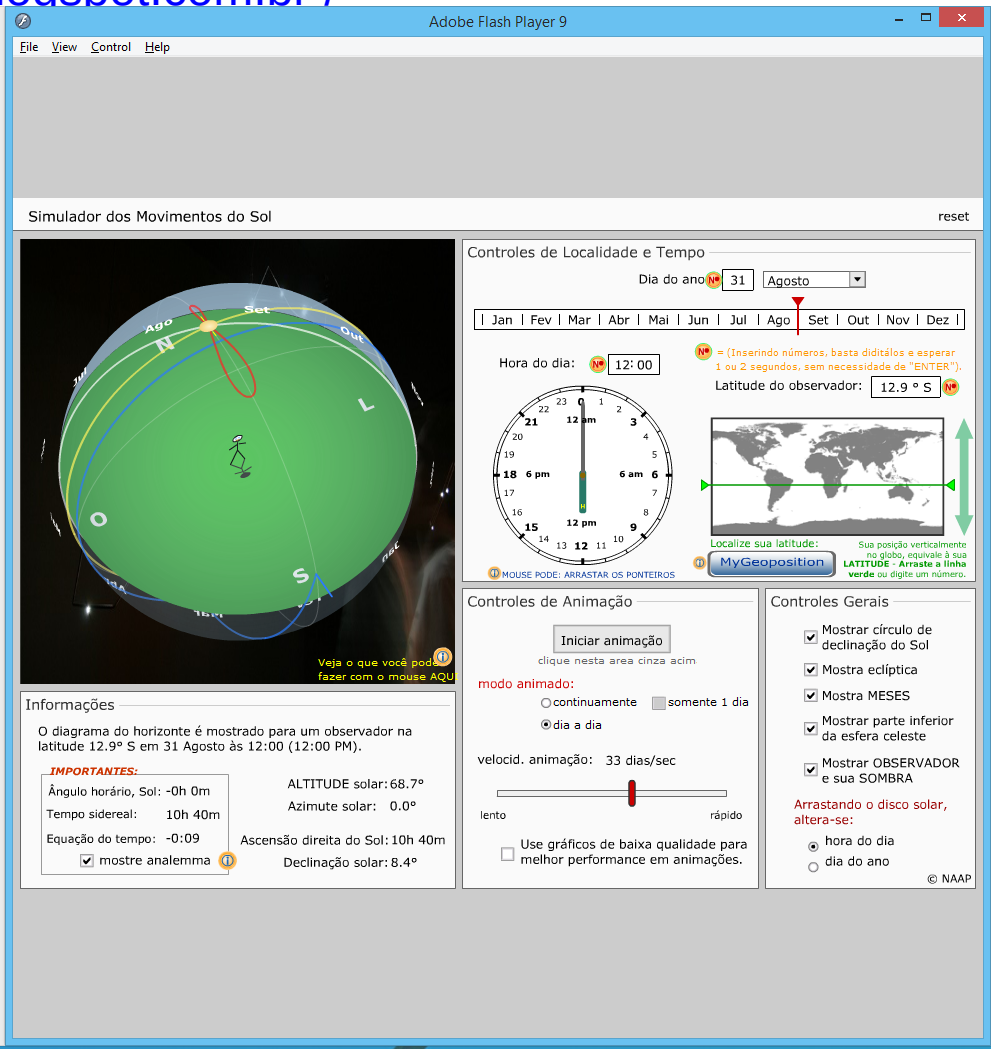
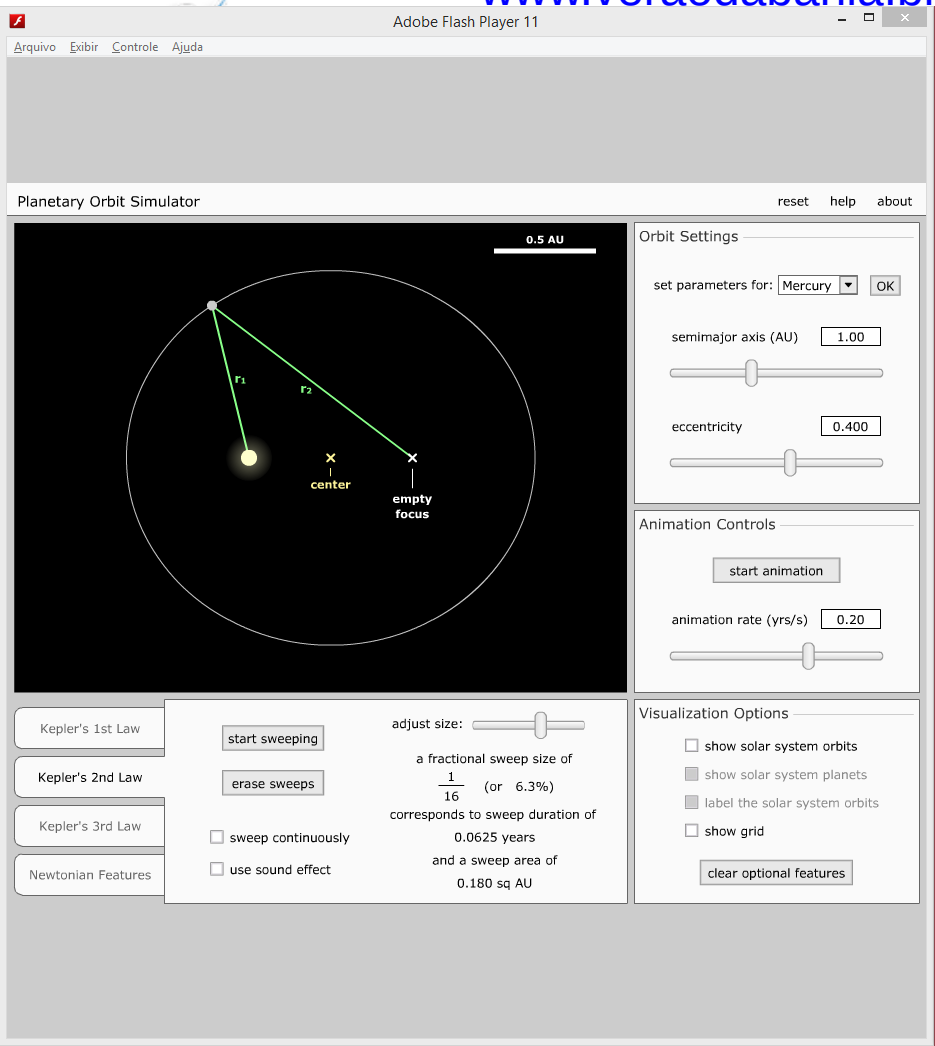
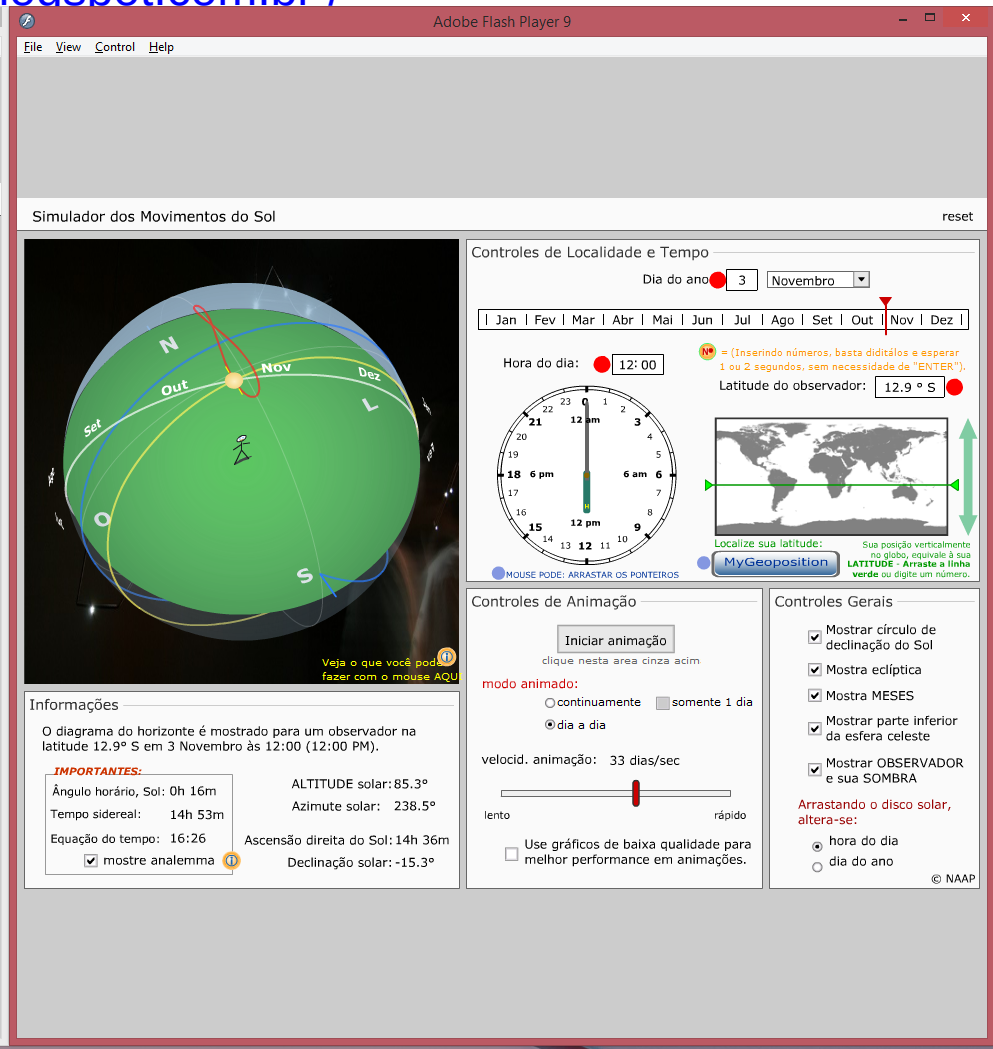


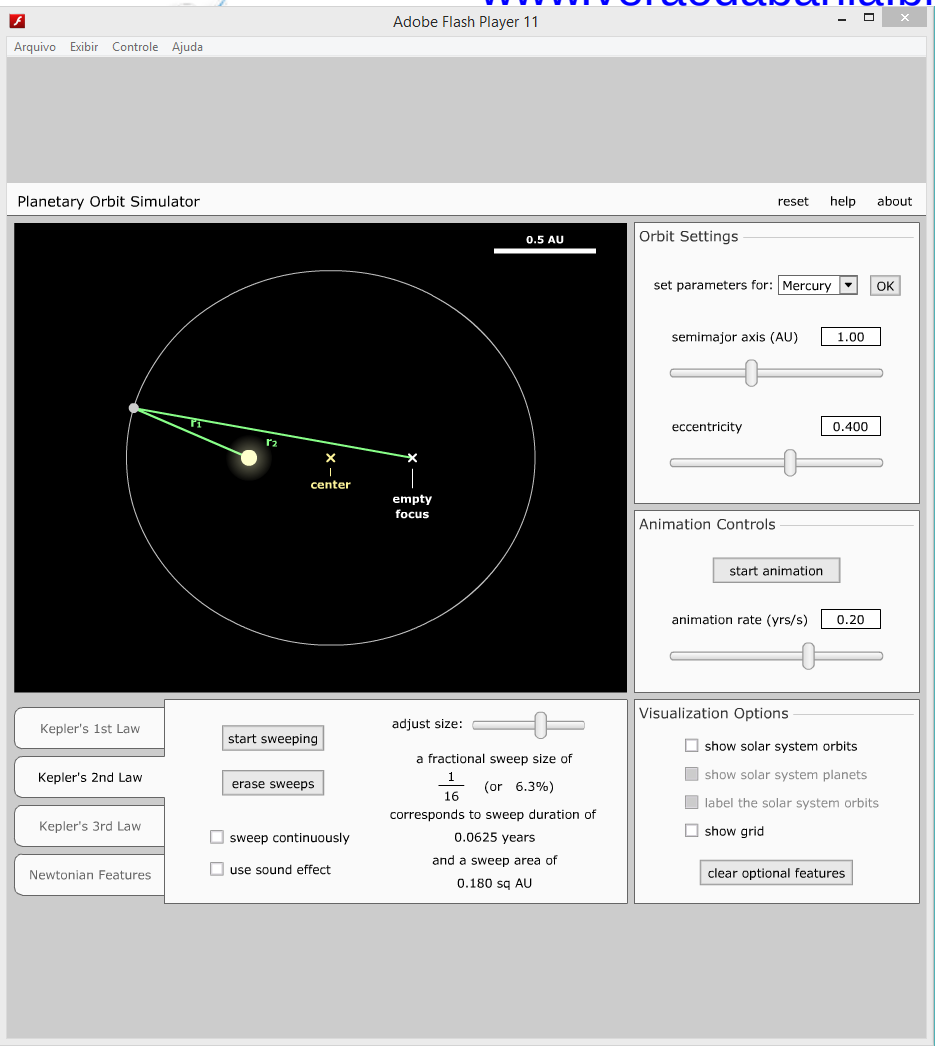


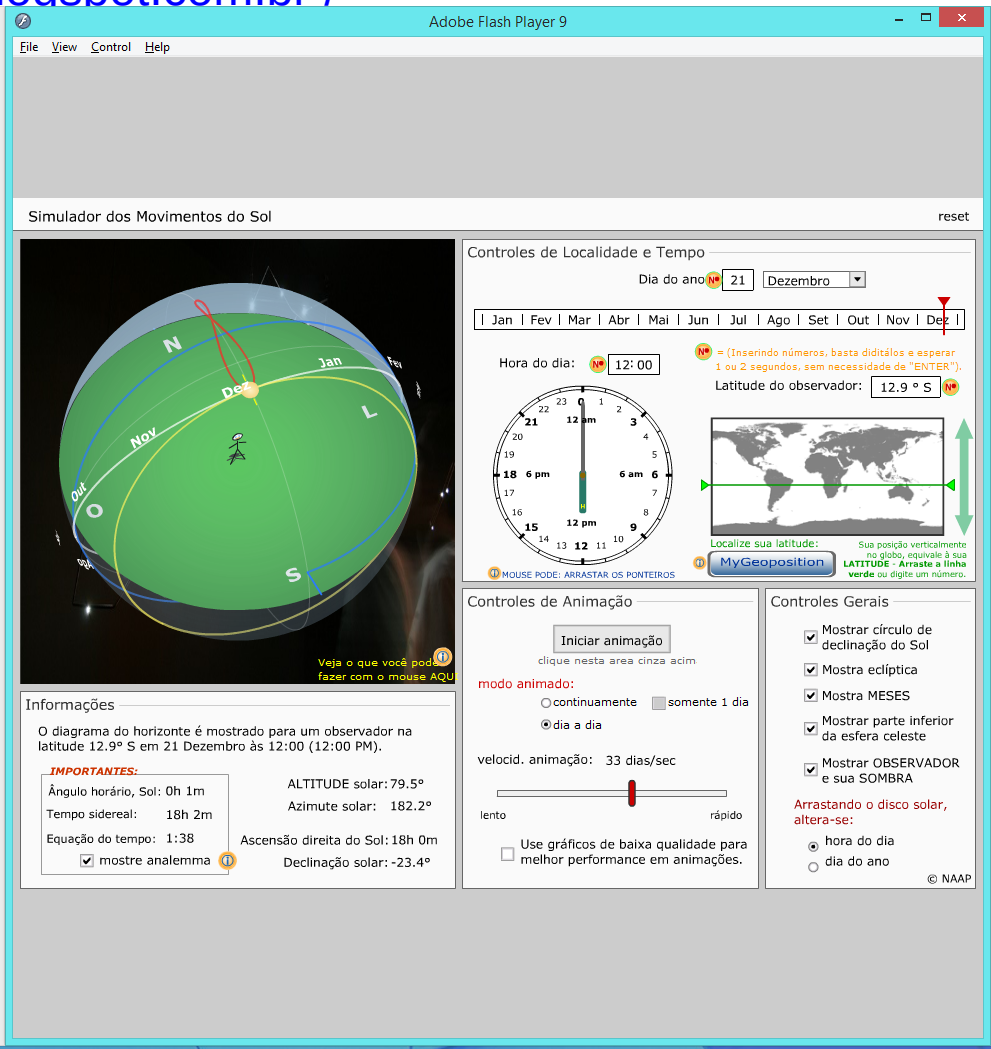
Date: August 31st





Date: November 3rd





Date: December 21st / Back

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- End of Translation
- But... Where is the paradoxical variation?

Paradoxical Variation of the Solar Day Related Kepler/Newton Sys.

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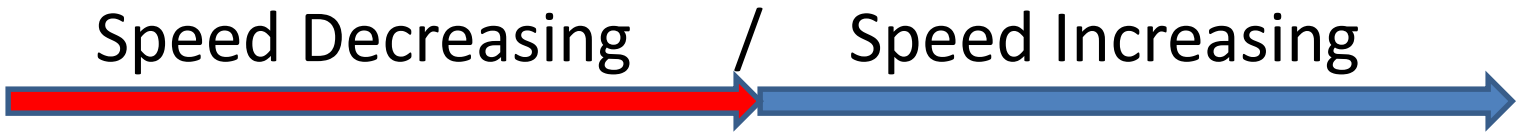
- Earth:



Jan	Fev	Mar	Abr	Mai	Jun	Jul	Ago	Set	Out	Nov	Dez
D 05						D 05					

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PVSDRKNS

- Before The Solar Day Approach:

- We need a allowance of the Phycisist
- Solar day has no speed
- About solar day we must say “period”

PVSDRKNS

- Before The Solar Day Approach:

- When the solar day has increased its period, we will say its “speed” decreased

- When the solar day has decreased its period, we will say its “speed” increased

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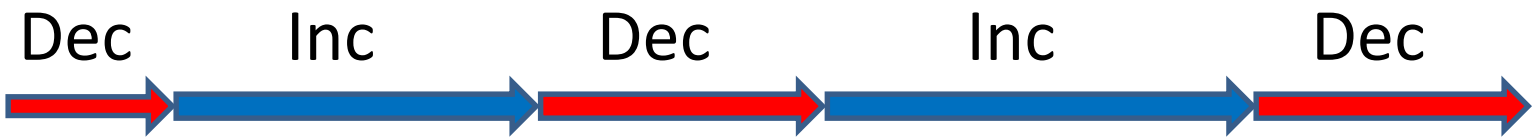
- Solar Day “Speed” (Opposite of period):



Jan	Fev	Mar	Abr	Mai	Jun	Jul	Ago	Set	Out	Nov	Dez
	D 12			D 11		D 25				D 03	

Paradoxical Variation of the Solar Day Related Kepler/Newton Sys.

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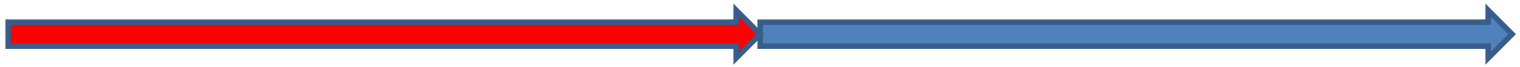
- Earth Speed:



Jan	Fev	Mar	Abr	Mai	Jun	Jul	Ago	Set	Out	Nov	Dez
D 05						D 05					

- Solar Day “Speed”:

Jan	Fev	Mar	Abr	Mai	Jun	Jul	Ago	Set	Out	Nov	Dez
	D 12			D 11		D 25				D 03	

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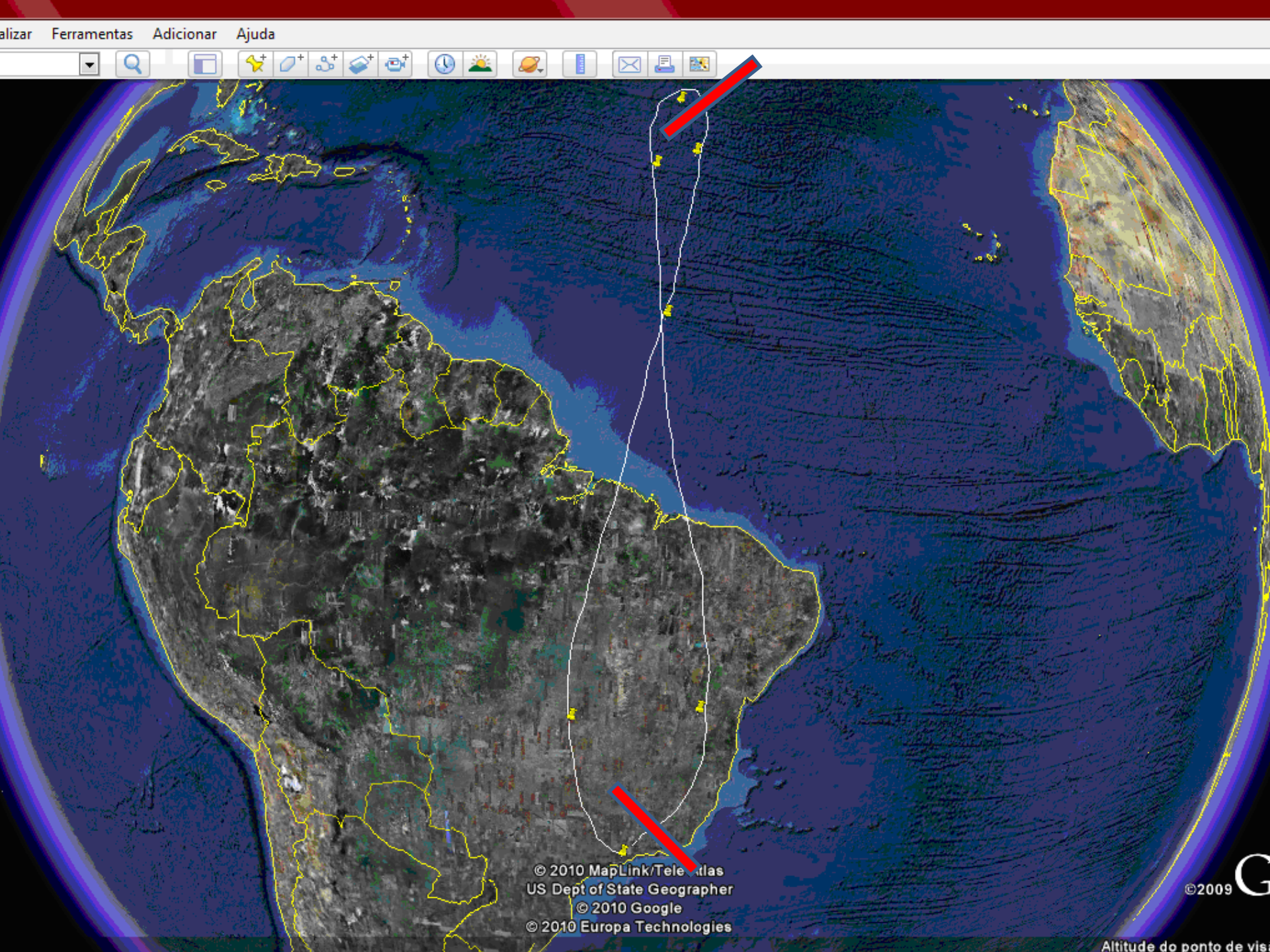
- Special Points From Analemma: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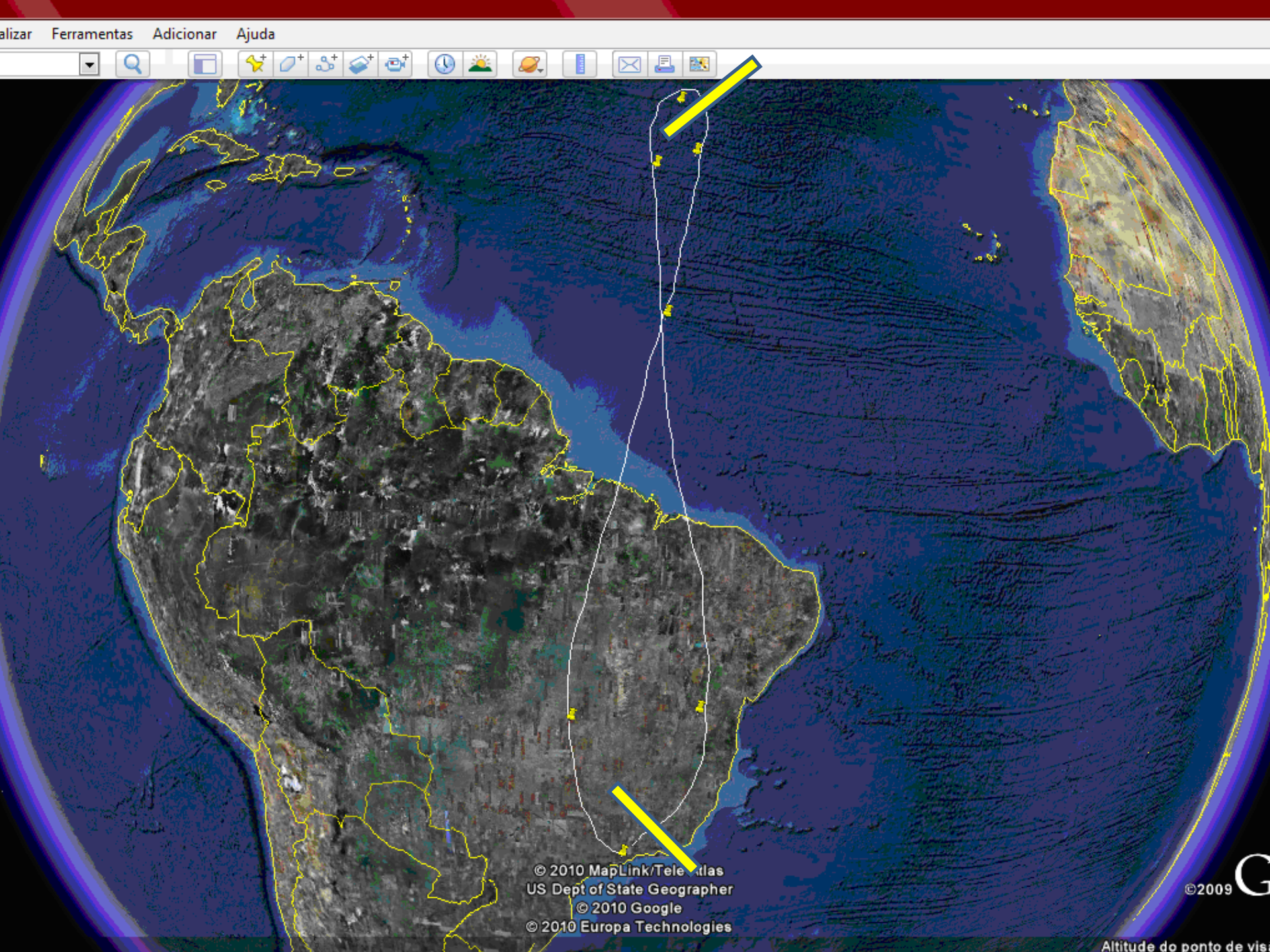
Altitude do ponto de vis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Ferramentas
Adicionar
Ajuda
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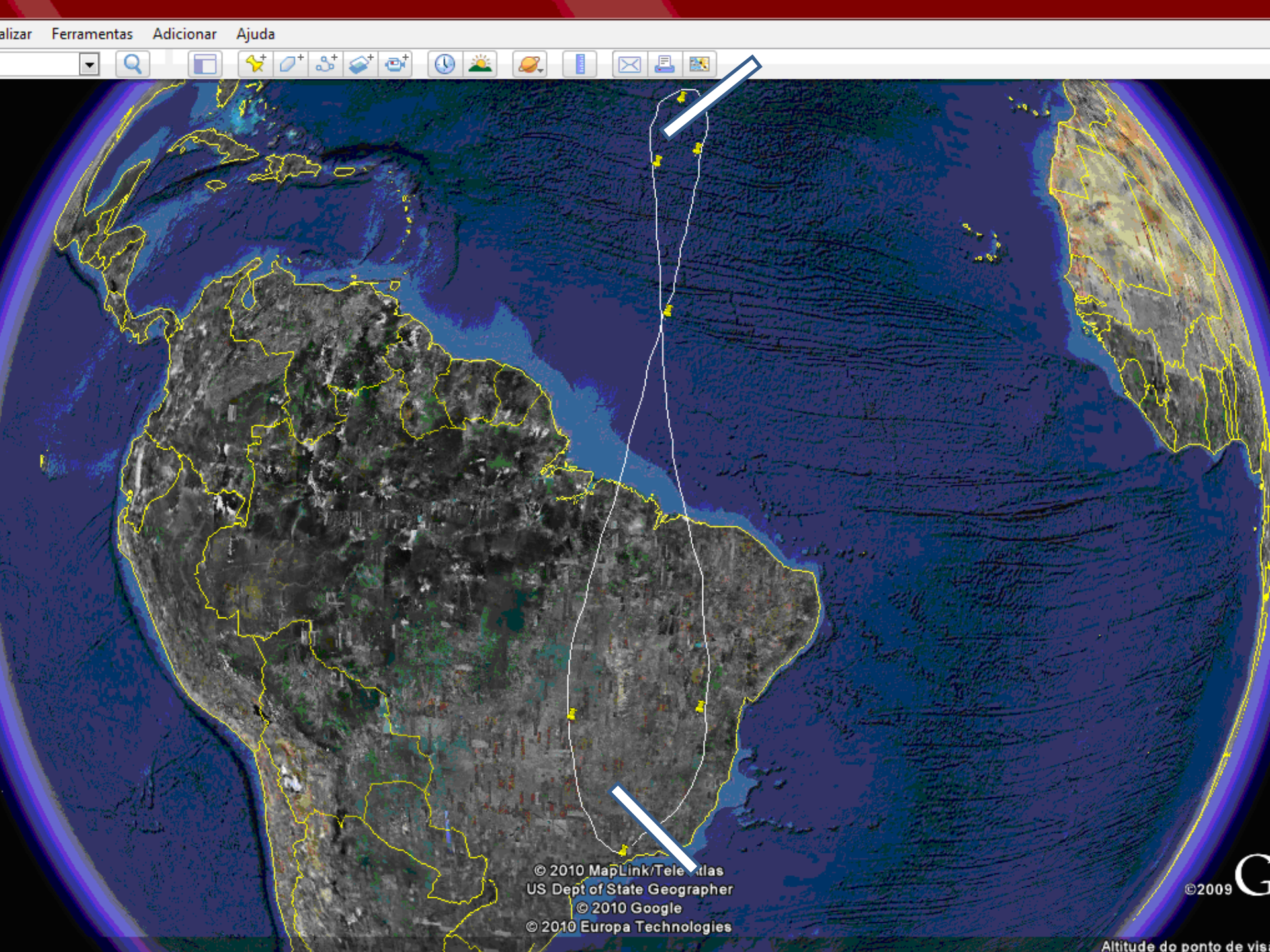
Altitude do ponto de vis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Ferramentas
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©2009
Altitude do ponto de vis

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- Measurements in video on You Tube:
- https://www.youtube.com/user/luizsampaioathayde
- “Velocidade do Dia Solar” (In Portuguese)

PVSDRKNS

- Measurements / Results:
- July 12th and 13th/2012 – 1437 min
- August 27th and 28th/2012 – 1440 min (Three videos)
- October 08th and 09th/2012 – 1441 min
- October 29th and 30th/2012 – 1442 min
- December 03rd and 04th/2012 – 1441 min
- January 07th and 08th/2013 – 1439 min

Paradoxical Variation of the Solar Day Related Kepler/Newton Sys.

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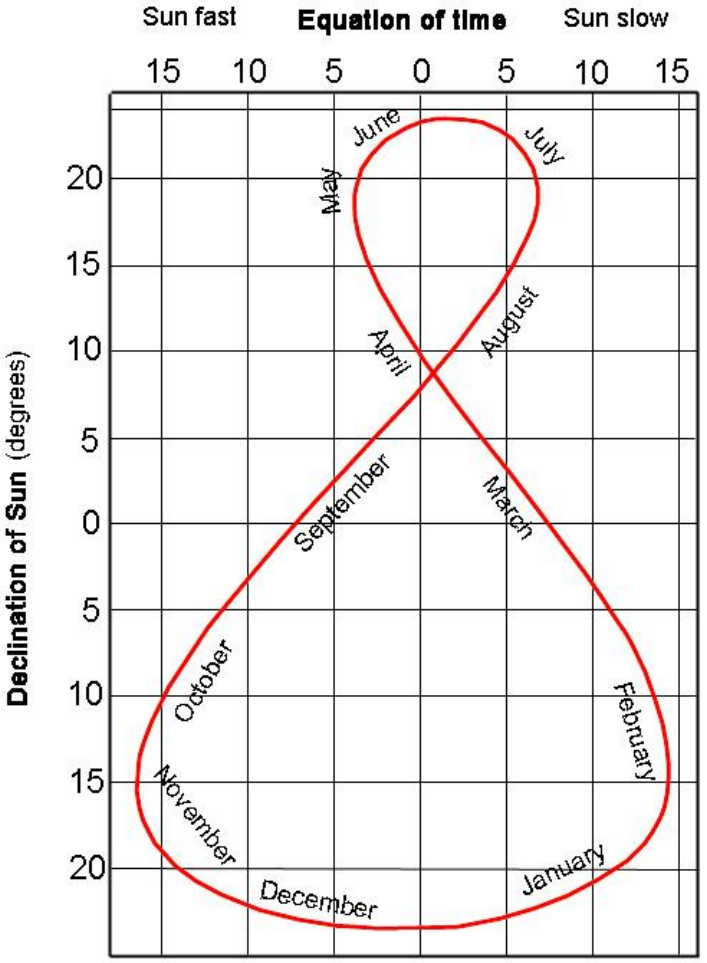
PVSDRKNS

- Measurements / Results:
- Jul 12th and 13th/2012 – 1437 min
- Aug 27th and 28th/2012 – 1440 min
- Oct 08th and 09th/2012 – 1441 min
- Oct 29th and 30th/2012 – 1442 min
- Dec 03rd and 04th/2012 – 1441 min
- Jan 07th and 08th/2013 – 1439 min



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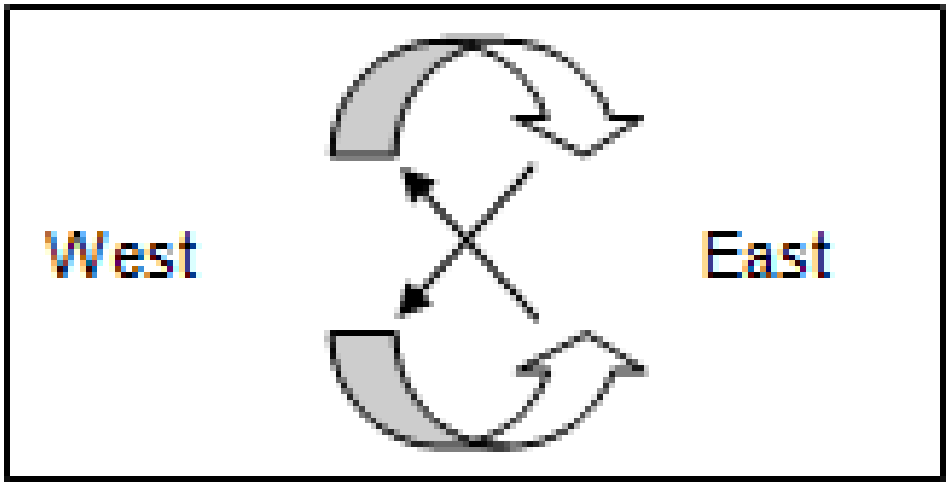
- Analemma Elements:



Lines: Period increases / Decreases "speed"

Curves: Period decreases / Increases "speed"

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- Conclusions:
- Increasing or decreasing variations in the periods of the solar day length do not always occur at the same time the planet accelerates or decelerates. There are times when this occurs synchronously and at other times does not occur

PVSDRKNS

- Conclusions:
- The increasing or decreasing of the “speed variation” in the solar day duration periods are four each year, while the acceleration or deceleration of the planet occur only twice in the same time

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- Conclusions:
- The analemma is caused by the inclination of the imaginary axis of the planet and the eccentricity of orbit around the sun. Usually we study its causes. This study shows that it shows a different solar day variation of the planetary speed variation system

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- Conclusions:
- A curiosity is that if we score the dates aphelion and perihelion in analemma, we see that they occur almost perfectly about fourteen days after the two solstices.
  North solstice ~june 21st / aphelion ~july 05th
  South solstice ~dec 21st / perihelion ~jan 05th

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Paradoxical Variation of the Solar Day Related Kepler/Newton Sys.

Prof. MSc.: Luiz Sampaio Athayde Júnior

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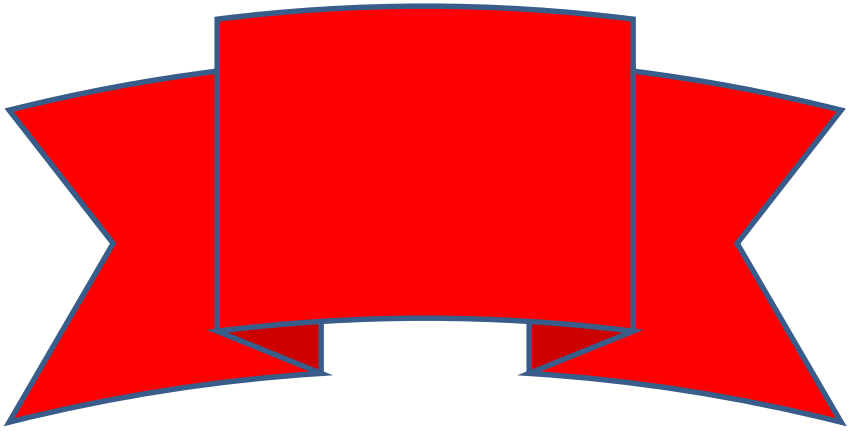

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Thank You Very Much!