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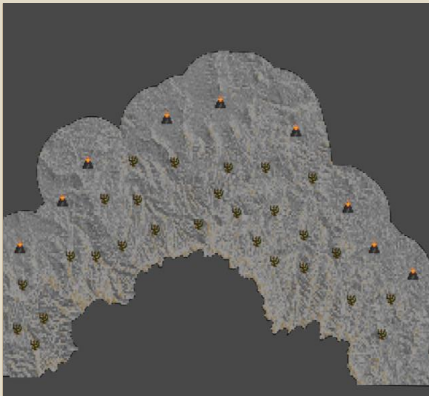
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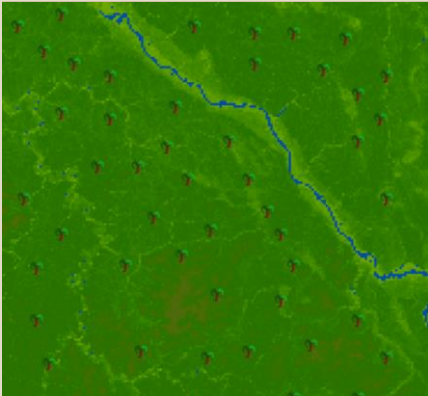
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Using the wiki

- All maps featured on any OSRS Wikipedia page should be assumed to be facing north unless stated otherwise
- The content featured on the OSRS Wikipedia is based on real life events and locations and is stylised to make it appear to take place in a video game. Any included references will link back to the real-life version of events
- The OSRS Wikipedia uses the in game data to reference time, however any events set in the 5th Age (5A) should be assumed to reference modern times

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Remote Sensing

Remote Sensing is a **lunar spell** that allows for the acquisition of information about an object or area from distance^[2]. Available from level 74 **Magic**, casting this spell requires 5 **earth runes**, 5 **water runes** and 1 **astral rune**. The spell can be **upcasted** at levels 82 and 94 to increase the clarity and resolution of the information obtained. It is used to study **Gelinor's** land and oceans. The Remote Sensing spell allows for the collection of data from outside of the **player's** render distance.

The Remote Sensing spell is often used in combination with various pieces of **dwarven technology** to amplify its effectiveness. These include **lidar** and **radar** as well as other types of sensors. These sensors can be equipped with **elven gems**, such as the **infrared** and **ultraviolet** gems which allow for the collection of information from beyond the small section of the **electromagnetic spectrum** usually visible to the player.

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History [[edit](#) | [edit source](#)]

The Remote Sensing spell was discovered by the **Wizard's Guild** in the early **5th Age**. Initially to use the spell players would have to use a **balloon** or **Gnome Glider** to gain high enough altitude for the spell to be useful^[3]. However, in recent years there have been huge advancements in dwarven technology, which allows a player to cast the spell and then monitor the information received remotely^[2].

Uses [[edit](#) | [edit source](#)]




The Remote Sensing spell has many uses and is beneficial to players all across Gelinor. For example, Remote Sensing is often used by members of the [Farming Guild](#) to monitor [crop](#) health without having to physically visit each [farming plot](#)^[4]. This is highly beneficial as although the [runes](#) to cast the Remote Sensing spell are initially expensive it saves a player significant gold in the long-term and allows them to increase crop yield, check for [diseases](#) and monitor drought^[5].

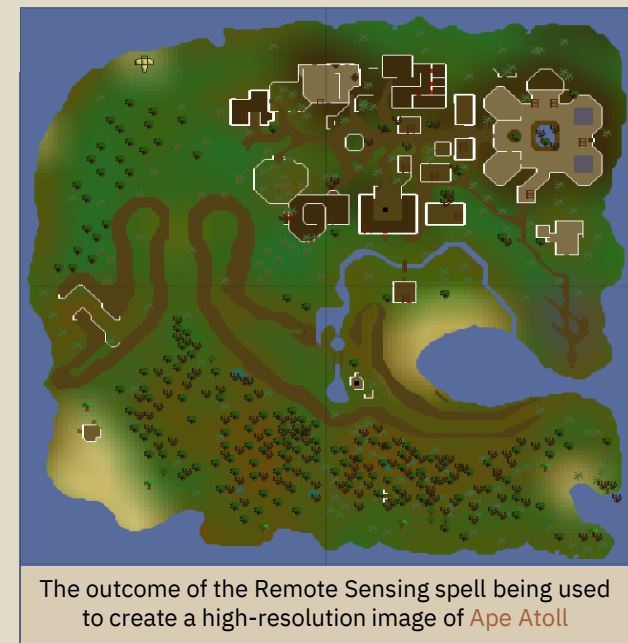
Dwarven Technology [[edit](#) | [edit source](#)]

In current times the Remote Sensing spell is commonly used in combination with dwarven technology, which allows for the collection of information outside of that which is visible to a human eye. **Dwarven satellites** are the most commonly used, these fly high above Gelinor and are equipped with various magic elven gems. A typical human without the aid of magic is capable of only seeing a small fraction of the electromagnetic spectrum^[2]. However, since the rediscovery of the elven **Kingdom of Prifddinas** they have shared their gems with the rest of Gelinor and human scholars are now aware of how to capture information beyond visible light using the Remote Sensing spell. Examples of Dwarven satellites include the **Defender**, **and Mithril II, V and VIII**.

Trivia [[edit](#) | [edit source](#)]

- The Remote Sensing spell is RuneScape's equivalent to real life Remote Sensing techniques such as Satellites. The Defender satellite is the equivalent to the Sentinel-2 satellite and the Mithril satellites are the equivalent to the Landsat satellites from the real world.

Remote Sensing	
	
Released	15 October 2015 (Update)
Members	Yes
Level	 74
Spellbook	Lunar
Type	Utility
Experience	140
Runes	5  5  1 
Description	Views areas of Gelinor that are far out of view



Almería

Almería is a kingdom in southern **Kandarin**. Its capital city is **Al-Andalus** and it is currently ruled by **King Alfonso VI**. Its economy is heavily based on agriculture, especially the large greenhouses that are found there^[6]. There is also small amounts of tourism from the nearby **Kingdom of Misthalin**. It is also home to the **Farming Guild**.

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Transport

[edit | edit source]

There are several ways to reach the city:

- Almería Teleport** – This teleportation method is available if the player's **Magic** level is at least 42. This is the most common and convenient method of reaching Almería
- Skills necklace** - Can be used to teleport to the **Farming Guild** just North of Al-Andalus.
- Gnome glider** – The **Gnome glider network** from the **Grand Tree** can be used, landing the player just south of Al-Andalus.

Points of interest

[edit | edit source]

Farming Guild

[edit | edit source]

The Farming Guild is a large greenhouse founded by **Hosidius** farmers. It has three sections, with each section requiring a higher **Farming** level than the previous to enter. Players need at least level 50 farming for the first section, and then 62 and 75 farming for the subsequent sections.

Greenhouses

[edit | edit source]

*Main article: **Agriculture in Almería***

Much of Almería is covered in a complex maze of greenhouses. The region used to only contain a sparse amount of small hold farms, however, since the ascension of King Alfonso VI to the throne in 780 5A, heavy agricultural development has occurred^[6]. This intensified after the expulsion of the Farming Guild from the neighbouring **Kingdom of Porto**, causing many wealthy and experienced landowners to move to Almería, eventually causing the creation of a new Farming Guild north of Al-Andalus. The main crop grown in these greenhouses are vegetables including **tomatoes**, **peppers** and **cucumbers**^[1]. These are then exported to the affluent northern Kingdoms of **Prydain**, **Nethermoor** and **Deutsch**. This has provided a massive economic boost to the kingdom; however, many activists have criticised the poor working conditions in the greenhouses and local **nature spirits** are upset at the effect the greenhouses have on the local environment^[8].

Trivia

[edit | edit source]

- The Kingdom of Almería in RuneScape is based on the real-world province of Almería in Spain. The inclusion of the greenhouses and the issues surrounding them in RuneScape is likely a comment by the game developers on the real-world problems caused by agriculture in Almería.

Almería	
 <div>A screenshot of the Almería Teleport building, a large glass and stone structure with a central entrance and statues on either side. Several players are standing in front of the building.</div>	
<div><div><div><div><div></div><div>Released</div></div><div><div></div><div>Members</div></div><div><div></div><div>Location</div></div><div><div></div><div>Inhabitants</div></div></div><div><div><div></div><div>Teleports</div></div><div><div></div><div>Music</div></div></div></div></div> <div><div>23 November 2016 (Update)</div><div>Yes</div><div>Southern Kandarin</div><div>Humans<div>Morytanian Refugees</div></div><div><div><ul style="list-style-type: none">Almería TeleportAl-Andalus Teleport</div></div><div><div><ul style="list-style-type: none">GardenAdventure</div></div></div>	
Map	
 <div>A map of the southern region of Kandarin, showing the location of Almería. The map features a large white mountain range in the center, surrounded by green hills and a blue body of water to the south.</div>	

Agriculture in Almería

The economy of Almería is heavily based on the large expanse of greenhouses found in the south of the kingdom. since the ascension of **King Alfonso VI** to the throne in the year 780 5A, intense agricultural development has occurred which has brought a great deal of wealth to the kingdom. The maps on the right of the page were created by the **Royal Cartographic Society of Misthalin** using the **Remote Sensing** spell in combination with the **Dwarven Mithril satellites II, V and VIII**. They show the expansion of greenhouses from five years before King Alfonso’s reign up to the present in game year. Activists for peasant and migrant rights have long argued that the working conditions within the greenhouses are incredibly exploitative, and the workers are not paid enough **gold**^[10].

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Migrant labour
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Economic benefits [edit | edit source]

The greenhouses bring huge economic benefits to the kingdom. Every year up to 3.5 million tonnes of produce is exported abroad, creating over one billion gold for the kingdom in economic activity^[11]. The main places that are exported to are the kingdoms of **Prydain**, **Nethermoor** and **Deutsch**.

Environmental impacts [edit | edit source]

The Almería greenhouses have long caused tensions with local **water** and **nature spirits**. The greenhouses use significant amounts of water, causing water scarcity issues within the kingdom^[12]. The greenhouses also degrade and contaminate the soil, which along with decreasing long-term agricultural output, can pollute local water bodies^[13]. Therefore, **players** who wish to **fish** in the region are recommended to use the **Cure Water spell** before they begin fishing otherwise a 20% xp gain **debuff** will be added to their **character**.

Migrant labour [edit | edit source]

Most of the workers who man the greenhouses are refugees from **Morytania**. They are **humans** who have fled the rule of the **Darkmire vampires**. These workers face poor working and living conditions with some comparing their lives to that of **slaves**^[14]. The **Almerían nobility** are keen to continue to exploit this cheap source of labour however. Players are advised to avoid taking **farming contracts** that involve work in the Almería greenhouses as they generally reward very low gold and xp points.

Trivia [edit | edit source]

- Map visualisation is stylised to appear more blocky, but the actual data comes from a full unsupervised classification technique.
- The Royal Cartographic Society of Misthalin is a reference to the British Cartographic Society



Dragon Mountains

Dragon Mountains are a region in in eastern **Al Kharid**. The region is named for the large **dragon** population found there. Dragon Mountains are mostly **grassland** although there are pockets of forest^[15]. The local human population uses this land for **cattle farming** as well as to grow **crops**. The grasslands are dependent on regular burning to maintain their health^[16]. This burning occurs during the annual **lava dragon** migration across the Dragon Mountains. Occasionally the fires burn out of control and damage the nearby forests and farms.

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Transport [edit | edit source]

There are several ways to reach the Dragon Mountains:

- Pyromancy Tome** – Obtained from the **Wintertodt** minigame. It teleports a player outside the entrance to the **Pyromancer Guild**. This is the most commonly used method to get to the Dragon Mountains.
- Dragon Teleport** – Teleports the player to the lava dragon area in the north of the Dragon Mountains. Requires at least level 67 **magic**.

Points of interest [edit | edit source]

Pyromancer Guild [edit | edit source]

The Pyromancer guild is a large assembly of **wizards** who follow **the School of Fire**. Players who have a magic level of at least 75 may enter, this requirement is lowered to level 55 if the player has completed the **Dragon Slayer quest**. The Pyromancer guild plays an important role in the regions economy. They create fire breaks across the area to prevent the fires from spreading out of control.

Grassland fires [edit | edit source]

*Main article: **Dragon Mountain fires***

Every year lava dragons set fire to large sections of the Dragon Mountain grassland. Although this may seem dangerous for **players** and **NPCs** the Pyromancer guild heavily monitors these fires and prevent them from spreading out of control. In current times much of the monitoring is done using the **Remote Sensing spell**. The regular burning of the grassland helps it maintain its health which increases agricultural output for the local cattle farmers^[17].

Trivia [edit | edit source]

- The name Dragon Mountains is a reference to the real-world South African national park uKhahlamba-Drakensberg. Dragons Mountains is the literal translation of Drakensberg from Dutch.

Dragon Mountains	
	
	
Released	15 October 2015 (Update)
Members	Yes
Location	Al Kharid
Inhabitants	Humans <p>Dragons</p>
Teleports	<div><ul style="list-style-type: none">Dragon Teleport</div>
Music	<div><ul style="list-style-type: none">Through the FireCall to BattleFarm 2</div>
Map (Rotated to fit page)	

Dragon Mountain fires

Every year during the summer months, **lava dragons** migrate across the **Dragon Mountains**. When this occurs, they set fire to large portions of the **grassland** present there. **Players** are advised to bring an **anti-fire potion** or **anti-dragon shield** should they visit this area during these months. The fire is beneficial for the natural grasslands of the region; however, it can sometimes burn out of control. The **Pyromancer Guild** plays a key role in preventing this from happening by creating fire breaks and monitoring the fires.

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Pyromancer involvement [edit | edit source]

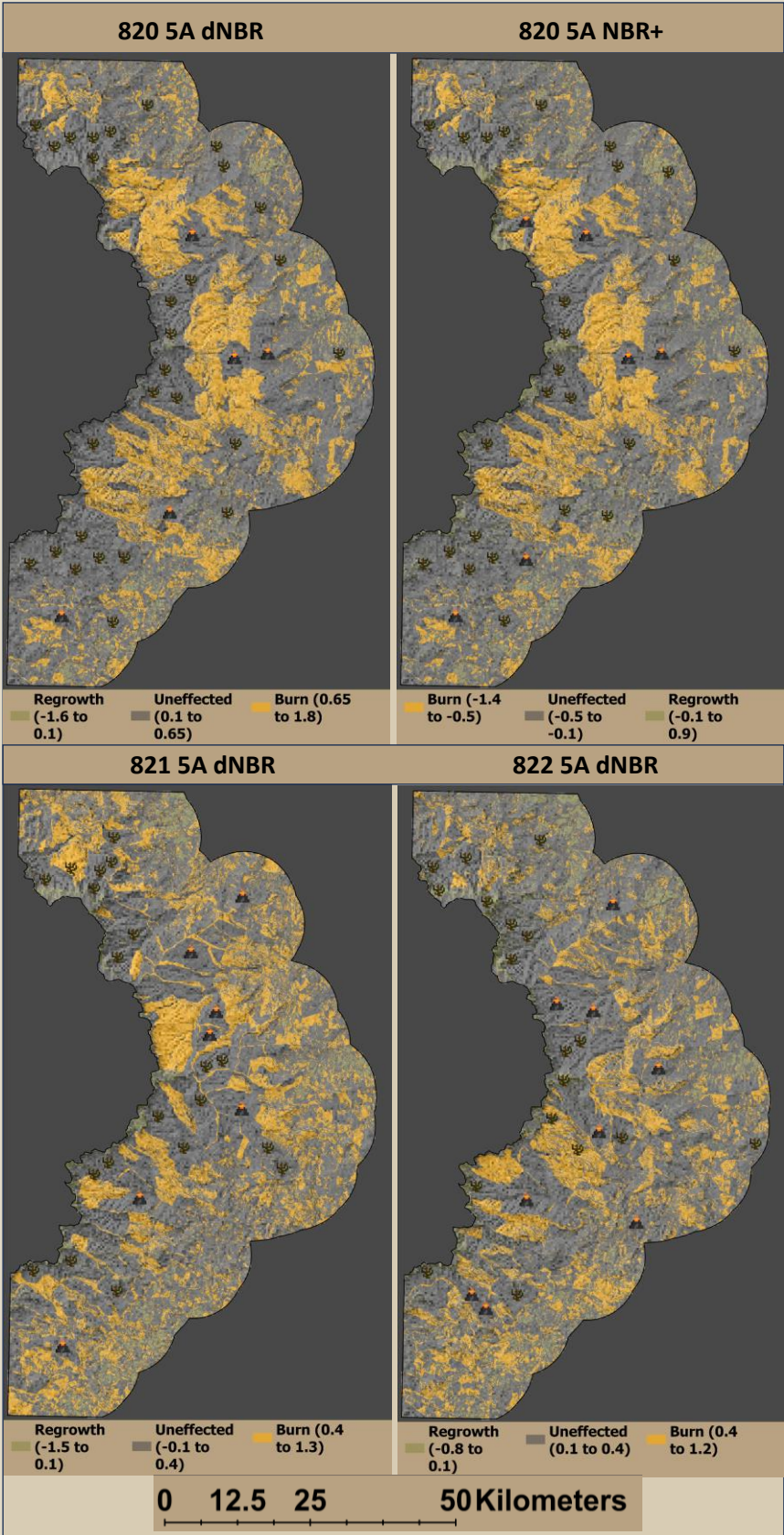
The pyromancers create fire breaks to manage the fire. A fire break is where a **pyromancer** pre-burns a strip of land before the dragon migration begins. This prevents the fire from spreading over this strip^[18]. These strips should also be considered as **safe-zones** for players as they are out of the range of the lava dragon **fire attack**.

Remote sensing [edit | edit source]

The Pyromancer Guild regularly uses the **Remote Sensing spell** along with the **Dwarven Defender** satellite to monitor the spread of fire and also monitor plant regrowth. The maps shown on the right side of the page are examples of those produced by the Pyromancer Guild. The Pyromancer Guild has developed an index known as the **differenced Normalised Burn Ratio (dNBR)** to assess fire severity. dNBR is calculated by taking the difference between **NBR** values before a fire event and the NBR values after a fire event^[19]. Positive values indicate areas which are more severely burned while negative values suggest post-fire regrowth or recovery. An additional formula known as **NBR+** can be used specifically with the Defender satellite. As the maps show in some years the burned extent is much larger. There is only very small differences between the dNBR and NBR+ in the year 820 5A. The fire breaks created by the pyromancer guild are clearly visible, especially in the year 821 5A, they are the thin lines of burned area.

Trivia [edit | edit source]

- The process used by the Pyromancer guild in game to calculate burn severity is the same that real life Remote Sensing experts use. The OSRS developers have stated that they chose to lift this method from the real world to encourage learning about remote sensing



The Kharazi Rainforest

The **Kharazi Rainforest** is an area located in southern **Karamja**. The Rainforest is divided between the large **Kingdom of Brasil** and the smaller kingdoms of **Peruvia** and **Kolomba**. The region contains a diverse range of animals, so is often used by players wishing to train their **hunting** skill. The main inhabitants are **humans**, mainly consisting of the native **Kharazi** tribe people and newer settlers from **Asgarnia** and **Kandarin**. There are also small **ogre** and **tzhaar** populations.

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Transport [[edit](#) | [edit source](#)]

There are several ways to reach the Kharazi Rainforest:

- **Karamja Teleport** – This teleportation method is available if the player's **Magic** level is at least 53. This is the most common and convenient method of reaching Almería
- **Canoe system** – Players can canoe from **Lumbridge**, **Edgeville** and **Port Sarim**.

History [[edit](#) | [edit source](#)]

Early period and colonisation [[edit](#) | [edit source](#)]

The Kharazi Rainforest was initially only inhabited by the Kharazi tribe, however from the **Fourth Age** onwards colonisers from Asgarnia and Kandarín began to arrive in large numbers. These settlers now make up a majority of the human population in the Kharazi Rainforest. This has caused a decline of the native way of life as they have been increasingly squeezed and pushed further into the deeper parts of the **jungle**.


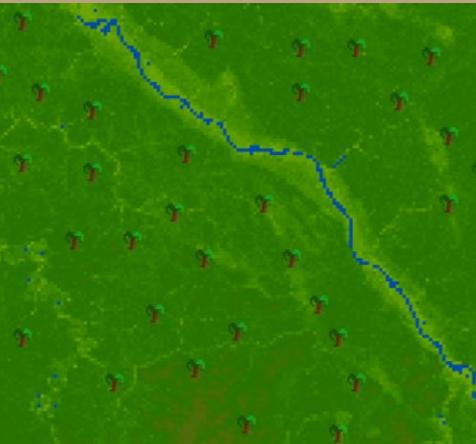
Agriculture, mining and deforestation [[edit](#) | [edit source](#)]

Main article: Deforestation in the Kharazi Rainforest

When **King Bolos von Aro I** ascended to the throne of Brasil in 819 5A, he began a large program of deforestation to exploit the rainforest for agriculture and mining^[20]. This angered the Kharazi tribe as well as **local nature spirits**. The wealthy northern **Kingdom of Misthalin** and it's vassals were also concerned by the environmental impact King Bolos was causing. In 817 5A the king of Misthalin ordered the **Royal Cartographic Society** to map the effects of deforestation in the Kharazi Rainforest using the **Remote Sensing spell**. During the events of the **quest Regicide** the player acts to remove Bolos von Aro from the throne and replace him with the previous king, **Luiz Silva**.

Trivia [[edit](#) | [edit source](#)]

- King Bolos von Aro I is a reference to real world Brazilian president Jair Bolsonaro. The fact that he is a key antagonist during the quest Regicide suggests that OSRS developers are concerned about the environmental damage he caused during his presidency

Kharazi Rainforest	
	
Released	12 March 2013 (Update)
Members	No
Location	Karamja
Inhabitants	Humans (Kharazi tribe and Settlers) Tzhaar Ogres
Teleports	<ul style="list-style-type: none"> Karamja Teleport Kharazi Teleport
Music	<ul style="list-style-type: none"> Jungle Karamja Jam
Map	
	

Deforestation in the Kharazi Rainforest

Deforestation of the **Kharazi Rainforest** has been occurring for decades. Much of the deforestation occurs due to **players** wishing to train their **farming**, **woodcutting**, **mining** and **firemaking skills**^[21]. In recent times during the rule of King Bolos von Aro I of Brasil deforestation has greatly accelerated, due to the revocation of numerous laws and royal decrees aimed at protecting the Kharazi Rainforest. The most significant of these was the opening of the Kharazi Rainforest area to non-members, allowing a flood of **bots** to enter for the first time greatly increasing the number of players present.

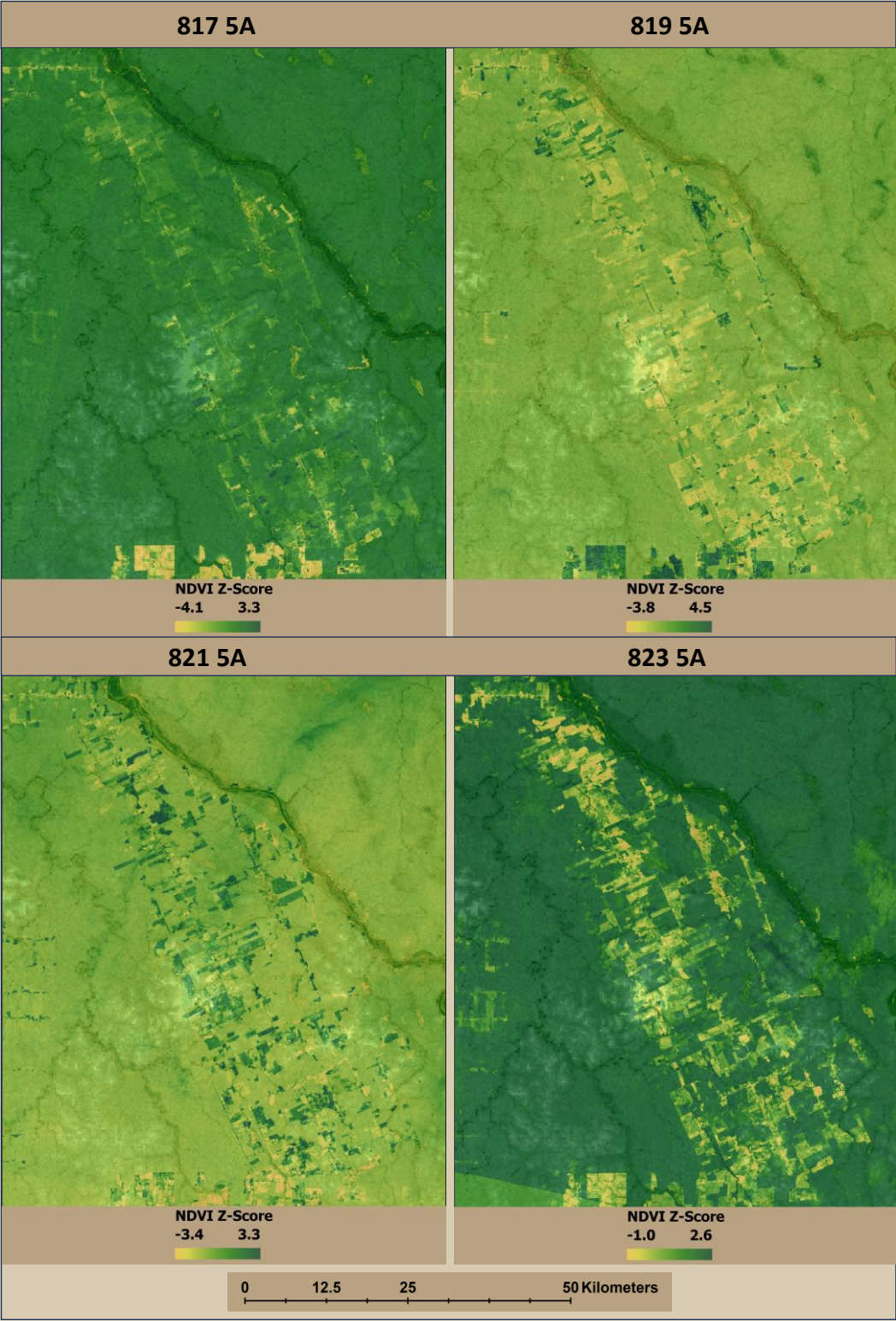
Contents [hide]
King Bolos von Aro
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King Bolos von Aro [edit | edit source]

King Bolos von Aro I has repealed many laws aimed at protecting the Kharazi Rainforest. These include weakening **Kharazi Tribe** land rights, reduce the **gold** budget of the **Forestry Guild**, and encouraging bots to clear the forest for mining by providing subsidies to large **bot farm** owners^[22].

Remote Sensing [edit | edit source]

To draw attention to the dire situation the forest faces the local Kharazi Tribe hired the **Royal Cartographic Society of Misthalin** to use their **Dwarven Defender satellite** along with the **Remote Sensing spell** to monitor deforestation in the Kharazi Rainforest. The Royal Cartographic Society collaborated with the Forestry Guild to do this. The Forestry Guild has an index known as **Normalised Difference Vegetation Index (NDVI)** which shows vegetation health and density whereas negative values show there is more exposed earth.. The maps to the right of the page show the **NDVI Z-Score**, a statistical measure used to standardise NDVI values and assess how individual NDVI values deviate from the mean^[23]. The data from these maps was all gathered by the Royal Cartographic Society during June. It shows a trend of increasing deforestation especially towards the centre of the image, however in some years there are also areas of recovery.



Ruins of Unkah

The **Ruins of Unkah** are what remain of the **Cape Kingdom civilisation**. In current times little remains apart from a few ruined buildings. At the beginning of the **5th Age** the area began experiencing a series of increasingly severe droughts. This turned the land from the lush grassland that it once was into a desert. These events have been written about in a book titled *The Downfall of the Cape Kingdom*, it is available for **players** to read in the **Zeah Library**.

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Transport [[edit](#) | [edit source](#)]

There are several ways to reach the Ruins of Unkah:

- **Desert Horn** – Obtained as a rare drop (1/500) from killing the goats found by the magic trees in the Mage Training Arena. This is the most commonly used method to get to the Ruins of Unkah.
- **Desert Teleport** – Teleports the player to the north of Unkah and just south of Uzer, requires at least level 67 magic.

History [[edit](#) | [edit source](#)]

Main article: The Downfall of the Cape Kingdom

The following history is taken from the book *The Downfall of the Cape Kingdom*, written by Sir Vey Lance in 625 5A. It details the series of increasingly severe droughts that led to the Kingdoms destruction. The Cape Kingdom experienced its first severe droughts in the years 417 and 418 5A^[24]. Although the water levels recovered after this, a decade later another more severe drought hit the Kingdom, causing mass drought and a refugee crisis as people began to move away. Now the once lush region is now an empty desert populated only by the occasional ruin which has weathered the test of time.

Mechanics [[edit](#) | [edit source](#)]

Players who travel into the desert around the Ruins of Unkah will suffer from **Desert Heat**. So it is advised that any player who enters ensures they have a large supply of **water skins** in their **inventory**.

Trivia [[edit](#) | [edit source](#)]

- The events faced the Cape Kingdom in OSRS mirror those currently occurring in South Africa in the real world. This is likely a comment by the developers urging players to be aware of the issues surrounding water security and resource scarcity.

Ruins of Unkah	
Released	15 December 2020 (Update)
Members	Yes
Location	Al Kharid
Inhabitants	Humans Sand Golems
Teleports	<ul style="list-style-type: none"> Unkah teleport Uzer teleport
Music	<ul style="list-style-type: none"> Arabian Nights Desert Dreams
Map	
	

The Downfall of the Cape Kingdom

The Downfall of the Cape Kingdom is a **book** written by **Sir Vey Lance** in 625 5A. It details the gradual decline of the **Cape Kingdom civilisation** due to growing drought and, as well as the Kingdoms efforts to prevent the drought from occurring. It also includes several maps made with the Remote Sensing spell, shown on the right of the page.

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Drought Prevention [edit | edit source]

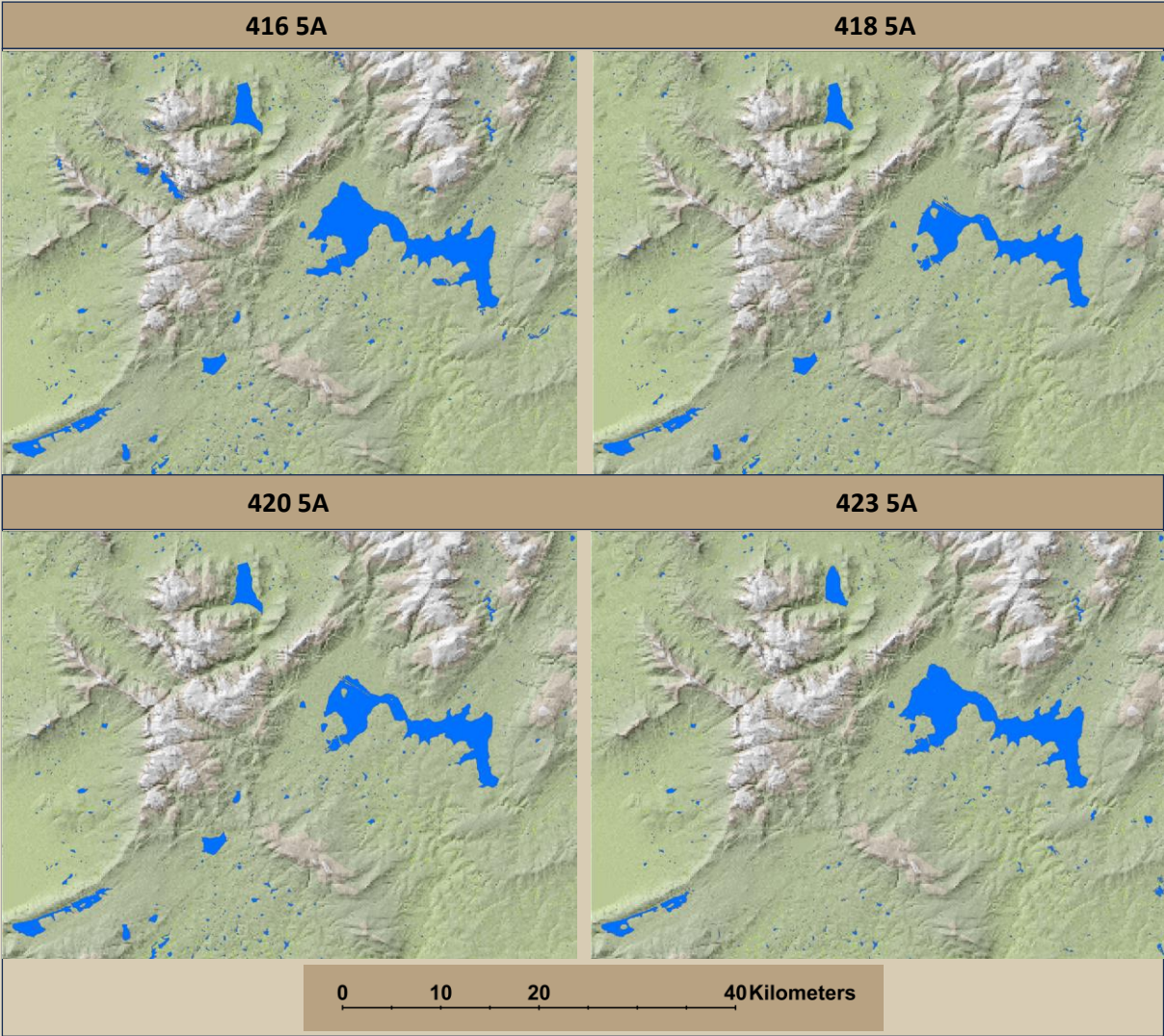
Beginning in the year 417 5A the Cape Kingdoms main reservoir, the large body on water on the east of the maps, began to dry out due to lack of rainfall and poor water resource management^[25]. Sir Vey Lance notes that residents of the Kingdom at the time used the term “**day zero**” to describe the day in which the reservoir could run out of water^[26]. **The King** introduced measures such as severe residential water usage restrictions, limiting water intensive actives and increasing the cost of water supplied to houses. Many of the Kingdom’s poorer residents complained that these restrictions did not apply to the wealthy **aristocracy** of the kingdom who continued to use vast amounts of water^[25]. By the year 423 5A the drought had alleviated and although some lessons had been learned it was not enough to save the Kingdom from the drought that followed during the 430s.

Historical Remote Sensing [edit | edit source]

The Decline of the Cape Kingdom includes several maps created by **the Remote Sensing Spell** by an **unknown wizard** during the time of the first drought. These are shown to the right of the page, freshwater reserves are depicted in blue. The drought is clearly visible in the year 418 5A, where the main reservoir to the east of the map is severely depleted despite it being the **wet season**. The maps appear to have identified the water bodies using a process known as **Modified Normalised Difference Water Index (MNDWI)**. Although as Sir Vey Lance notes this process is not always perfect as the map for 416 5A appears to feature an erroneous water body that exists on no other records to the northwest of the map. The unknown wizard author of these maps notes that they only noticed this area once they had drawn the maps out and by then the Dwarven Machinery that carried the remote sensing information had corrupted meaning the map couldn’t be changed. Sir Vey Lance also notes that the maps were likely made using a module of the **Dwarven Defender Satellite**.

Trivia [edit | edit source]

- The Dwarven Machinery corrupting the wizards work mimics the real-life struggles of people who use computer mapping software such as ArcGIS where work occasionally corrupts meaning you are unable to access it again.



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