Our planet formed about four-and-a-half billion years ago. Soon afterward, whatever life may have developed was wiped out during what’s called the Late Heavy Bombardment–a deluge of massive meteor and comet strikes that began around 3.9 billion years ago and probably lasted for a hundred million years.

The Bombardment melted much of the earth’s crust and boiled away the oceans, rendering the planet a seething, hellish sphere hostile to surface life. But apocalypse eventually gave way to rebirth as the Earth cooled and microbial life made a comeback.

**Life Underground**

That’s the story, in a nutshell. But according to one study, the Late Heavy Bombardment may not have done quite as much damage as previously thought. Computer models show that meteor and comet strikes probably melted only a small part of the earth’s crust.

Even if the oceans did evaporate, hydrothermal vents likely provided shelter for microbes that thrive in extreme conditions–in this case extreme heat. So life not only carried on during the Bombardment–it may have actually thrived, albeit underground.

**So what?**

The study suggests that life on Earth has existed without interruption for longer than we thought. Knowing this is important for understanding how life may have developed in the first place.

Plus, if microbes were able to withstand Earth’s fiery bombardment, perhaps there are alien microbes thriving in extreme conditions deep below the surface on other planets, like Mars.

And, finally, if early life on our planet was able to soldier on despite the chaos of the Late Heavy Bombardment, well, that’s quite a testament to life’s tenacity.

我们的星球大约在45亿年前形成。不久之后，无论生命可能发展到什么时候都被称为后期重型轰炸 - 一场大规模的流星和彗星袭击，大约在39亿年前开始，可能持续了一亿年。

Bombardment熔化了大部分地壳并将海洋淹没，使得这颗行星成为一个对表面生命有敌意的沸腾，地狱般的球体。但随着地球的降温和微生物的生命卷土重来，天启最终让位于重生。

### 地下生活

简而言之，这就是故事。但根据一项研究，后期重型轰炸可能没有像以前想象的那样造成太大的伤害。计算机模型显示，流星和彗星撞击可能只融化了地壳的一小部分。

即使海洋确实蒸发了，热液喷口也可能为在极端条件下茁壮成长的微生物提供庇护 - 在这种情况下极端高温。因此，生命不仅在轰炸期间继续进行 - 它可能实际上已经蓬勃发展，尽管是在地下。

### 所以呢？

该研究表明，地球上的生命没有中断存在的时间比我们想象的要长。了解这一点对于了解生命如何发展至关重要。

此外，如果微生物能够抵御地球的火热轰击，也许外星微生物在其他星球（如火星）的表面深处的极端条件下茁壮成长。

而且，最后，如果我们这个星球上的早期生命能够继续战斗，尽管后期重型轰击的混乱，那么，这很好地证明了生命的坚韧性。